DOCUMENT RESUME

ED 348 932 HE 025 844

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| AUTHOR | Rhem, James, Ed. |
| TITLE | The National Teaching & Learning Forum, Volume 1, 1991-92. |
| INSTITUTION | ERIC Clearinghouse on Higher Education, Washington, D.C.; George Washington Univ., Washington, DC. School of Education and Human Development.; Rhem (James) & Associates, Inc., Washington, DC. |
| SPONS AGENCY | Office of Educational Research and Improvement (ED), Washington, DC. |
| REPORT NO | ISSN-1057-2880 |
| PUB DATE | 92 |
| CONTRACT | RI88062014 |
| NOTE | 74p. |
| AVAILABLE FROM | ERIC Clearinghouse on Higher Education, One Dupont Circle, N.W., Suite 630, Washington, DC 20036-1183 (One-year subscription: $39). |
| PUB TYPE | Collected Works - Serials (022) |
| JOURNAL CIT | National Teaching & Learning Forum; v1 n1-6 1991-92 |
| EDRS PRICE | MF01/PC03 Plus Postage. |
| DESCRIPTORS | Classroom Research; Cognitive Style; Computer Assisted Instruction; Cooperative Learning; Discussion (Teaching Technique); Dyslexia; Educational Methods; *Educational Practices; Faculty Development; Higher Education; Instructional Improvement; Library Instruction; Metacognition; Multicultural Education; Teacher Education; *Teacher Effectiveness; Teacher Student Relationship; *Teaching Methods |
| IDENTIFIERS | American Association for Higher Education |

ABSTRACT

Volume One of this 12 page newsletter includes six issues. Typical features include: a lead article; Research Watch; ERIC Tracks; Case Studies; Case Study Responses; Curriculum; Teaching Assistants (TA) Forum; and Profile (personal and Programmatic). Major articles included in volume one are: "Faculty and Students: Different Ways of Understanding" (John Stephens Crawford); "Cognitive Apprenticeship: Teaching Inside Out" (Allan Collins et al.); "Time Travel: Personalizing the Eighteenth Century through a Personal Computer"; "ERIC Tracks: Learning Styles: Theory and Practice" (Judi Conrad); "Handbooks for TAs: An Overview and Some Suggestions for Using and Improving Them" (Mary Bort); "The Courage to Teach" (Parker J. Palmer); "Scholarly Teaching: From Image to Pitfalls" (Chris Nash); "Effective Teaching for Dyslexics (and Everyone Else)"; "Forming a Center for Teachers"; "Cognitive Apprenticeship II: Modeling Metacognition"; "Visual Literacy"; "An Anatomy of Boredom" (George E. Savage); "Laying the Groundwork for Class Discussions" (Forest Hansen); "ERIC Tracks: Cooperative Learning: Theory and Practice" (Karl Smith and Judi Conrad); "Sitting in on AAHE's (American Association of Higher Education) Forum on Exemplary Teaching"; "The Enriched Syllabus: To Convey a Larger Vision" (Howard Gabennesch); "Thinking All Over the Brain"; "A Paradigm Shift in Instructional Development?" "The Library and the Classroom: Old Neighbors--New Friends"; "Diversity and Learning Theory"; "Tests: Scratching for Grades"; "ERIC Tracks: Multicultural Education: Theory and Practice" (Judi Conrad); "Case Studies: The Case of the Miss Spellings (?)" (Kay Herr); "Case Study Responses" (Timothy Riordan and Kim Landon); "Classroom Assessment/Classroom Research: Four Years Into a Hands-On Movement"; "Research Watch: The Learning Cycle: Has Its Time Come Again?"; "Steps in the Learning Cycle"; "How to Improve Teaching with Learning-Centered Evaluation" (William Cerbin); "Programs: "Who's Teaching the Teachers?"; and Viewpoint: "Reflections on The Teaching Art" (William Vitek). (DB)

THE NATIONAL TEACHING & LEARNING FORUM

Volume 1 - Number 1-6, 1991-92

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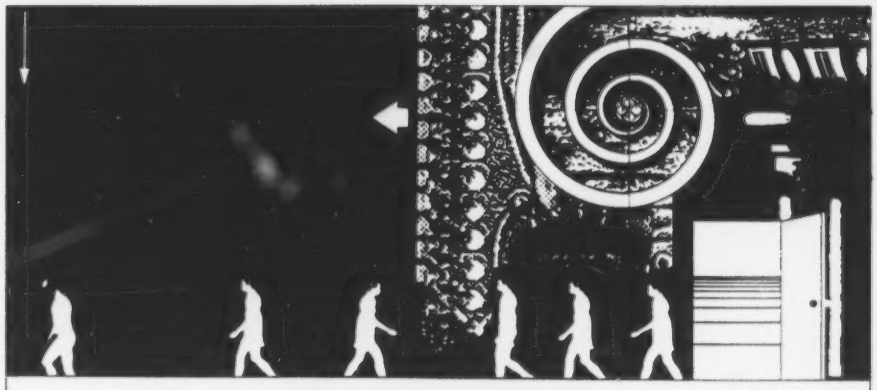
THE NATIONAL TEACHING & LEARNING FORUM

PREMIER ISSUE



# On the Road with Russell Edgerton

*AAHE's On-Going Salon on Teaching*

FOR THE LAST SEVERAL YEARS, Russell Edgerton, president of the American Association of Higher Education, has been trying to start what he likes to call "a new conversation" about teaching.

In 1989 the AAHE called its annual meeting "Stand and Deliver," after a successful movie about Jaime Escalante, the heroic high school calculus teacher from the barrios of East L.A., who appeared at the conference as keynote speaker.

A forum of exemplary teachers (nominated by their provosts) was also assembled at the conference to talk about good teaching. When the forum told stories and anecdotes about teaching as they'd experienced it in particular classrooms and particular disciplines, the conversation swelled with excitement. When the group was asked to extract general principles from the discussion, it fell flat.

Edgerton and the staff at AAHE formed some provisional conclusions from that experience. In his public appearances since then, Edgerton has been exploring these working hypotheses, hypotheses which are guiding the AAHE's formal "Teaching Initiative," announced last year and underwritten by grants from Jossey-Bass Publishers and the Lilly Endowment.

For Edgerton another presentation at the "Stand and Deliver" meeting seemed to offer a key to understanding why the effort to draw useful generalities from the exemplary teachers had failed. In that presentation Lee Shulman, professor of education and psychology at Stanford, recounted how his early studies of medical education had led him away from asking "What makes a good doctor?" to asking *"When* is a doctor good?" The emphasis on context, *gestalt* particulars, emerged as crucial to a deep understanding of teaching at its best. In the best teaching, knowledge was not merely transmitted effectively, it became transformed and reborn in students' minds. It became theirs viscerally as well as rationally.

These early researches led Shulman to launch a whole line of research into what he calls "the wisdom of practice," in which he studies teachers in their classrooms and explores the triangular bond between the teacher, subject matter, and students. In other words he broadens the focus to include both teaching and learning within various discipline-specific contexts.

All of this led Edgerton to suggest at the annual meeting of the Professional, Organizational and Development Network (POD) later that same year, that good teaching should be viewed as Aristotle viewed it, "as the highest form of understanding." Only when one grasped a subject well enough to convey his knowledge to another, Aristotle thought, could he be said to fully understand it.

What was missing in many instructional development efforts, Edgerton suggested, was a sufficient respect for the intellectual problems of specific disciplines. Generic approaches to improving teaching tended to focus on "teaching as telling," on teaching as an "act of transmission," he said, rather than as an "act of transformation." And the result of generic

coaching, he suggested, was that many faculty—while they care deeply about their teaching—remain uninterested in teaching as a subject for conversation. Why? The conversations offered them remained too distanced from the intellectual excitement and challenge faculty feel working in their disciplines. The conversations proceed as though it didn't matter what was being taught or to whom.

That appearance ruffled some feathers among the instructional development community. It was perceived by some more as a criticism of efforts to improve teaching through the improvement of generic teaching methods—leading discussions, organizing lectures—than as a call for a deeper understanding of the practical heuristics of teaching specific ideas to specific students.

In subsequent appearances at Colorado State University and the University of South Carolina earlier this year, Edgerton sharpened his focus on "teaching as a situated act." But, he insisted, it too often takes place in private. At Colorado State he said, "On many campuses, teaching is almost sex in the Victorian age—it's something you do, and sometimes even enjoy, but it's a private thing, not to be talked about in polite company."

In that same speech, however, Edgerton emphasized that "one of the main reasons that [teaching] is not talked about is that we haven't found a way to think about teaching, and therefore talk about teaching, that seems authentic." "We lack language that would give us access to its forms," he said. As a result, the generic conversation about teaching that began in the 1970s is running out of gas. A closer look at particular teaching and learning situations, he maintained, may refuel it.

Studying particular situations, Edgerton believes, has several advantages over general methods. Particular situations engage faculty where they are—in the field, struggling to teach particular students within particular bodies of knowledge. Thus the closeup view allows faculty "to view teaching as *intellectually absorbing*. Not just something you go do at 9:00 AM Monday, Wednesday, and Friday, but something you think about, discuss with colleagues, and even write about, as scholars."

In the earlier POD address, Edgerton talked about how a better understanding of teaching might influence faculty hiring and evaluation. "If we viewed teaching as the highest form of understanding," he said, "we'd care a lot about how they see their discipline not only as a discipline, but as a teachable subject. Do they see themselves and their fields as an accumulated body of knowledge and teach a 'rhetoric of conclusions' or do they see themselves and their disciplines as a dynamic framework of inquiry, a movie that isn't over and that they have a part in, a conversation of which their class is perhaps a microcosm?"

Ironically, some of Edgerton's public appearances have been viewed as remaining too much in their own "rhetoric of conclusions." But in Colorado and South Carolina he moved into what he likes to call "vehicles" for launching the new conversation about teaching. Specifically, he focused on the two arms of AAHE's "Teaching Initiative"—the development of specific case studies and teaching portfolios. (Future issues of *The National Teaching & Learning Forum* will examine each of these in detail.)

On many campuses, teaching is almost sex in the Victorian age—it's something you do, and sometimes even enjoy, but it's a private thing, not to be talked about in polite company.

But whatever the vehicle, the end of the road, the object of the travel, remains the same as it was when Edgerton first went on the road with these ideas: the cultivation of a teaching community for the coming decades who are not afraid to talk about teaching, but who find it as exciting and important as anything else they discuss. "If we could do that," Edgerton told the POD conference, "it seems to me we would be participating in perhaps the most exciting thing that could be going on in American higher education."

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**The National Teaching & Learning Forum** is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education. One-year individual subscription: $39.00.

Application to mail at second-class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:

**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, DC 20036-1183

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STUDENTS

# Faculty and Students: Different Ways of Understanding

*John Stephens Crawford*
*Professor of Art History*
*University of Delaware*

ONE OF THE MOST FRUSTRATING experiences in teaching is that of confronting students' seemingly total lack of comprehension of what seems obvious. This apparent lack of comprehension is a two-way street: teachers see it in students and students see it in teachers. Since 1970, William G. Perry, Jr. and his associates have made available a model of intellectual and ethical development, called Perry levels, in male college students that explains many of the reasons for apparent student incomprehension. More recently, Mary F. Belenky and her associates produced a similarly revelatory model for women's intellectual and emotional growth, although she does not use levels, as Perry does. If I had had the good fortune to read these works when I began teaching, I would have avoided many failures and frustrations.

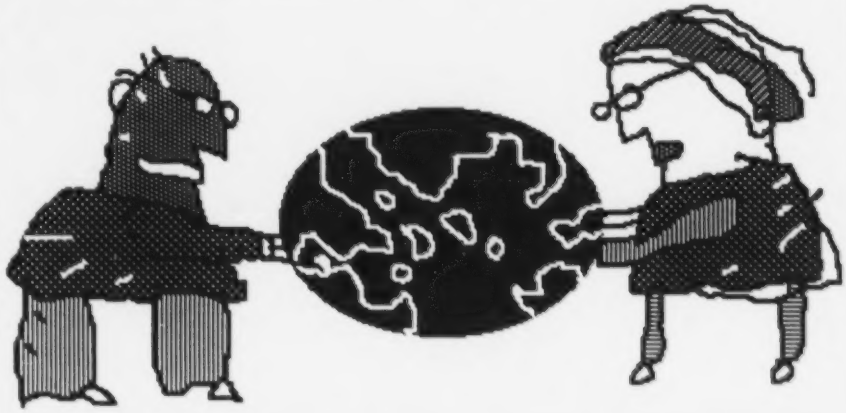
According to Perry, at the beginning of their college careers, male students tend to think of knowledge in terms of "we, right, good" versus "other, wrong, bad." Their education so far has made them believe that there is a right answer for every question and that the teacher's function is to tell them the "right" answers. Knowing the "right"answer makes you "good" and acceptable in the group. A teacher without the "right" answers frustrates them, and is believed incompetent. How many times has a student said to you, "just tell me what you want me to learn in this course" or "what's really important in this course?"

With women students there is a difference. According to Belenky, they tend to think of knowledge in terms of "they, right, good" versus "other, wrong, bad." Their education has usually associated authority and knowledge with males, and while they believe that there are right and wrong answers to all questions, the control over the "right" answers will never be theirs. They keep a low profile. One of my biggest mistakes as a beginning teacher was to try to "draw out" freshmen women students by practically cross-examining them in front of a class. Instead of drawing them out, I terrified them.

In middle Perry levels, male students see conflicts and controversy between authorities and teachers. Sometimes their reactions are: "There is an answer, but the teacher wants us to find it out by ourselves" or: "They don't know the answer themselves yet, but they are working on it and will solve it." However, when confronted with being forced to choose an alternative, for instance in an essay examination or term paper, these students have not yet developed the logical and analogical skills needed to test these alternatives. Therefore, "everyone has a right to his own opinion." Grading decisions are determined by the power of the instructor, and disputes abound. In those disputes, I frequently thought that the students were either stupid or obstinate, when I tried to explain my criticisms of their work. They often felt I had personal malice against them, because they identified so much with their work. They thought that if they got a bad grade on the first exam in the course, they were finished. Fortunately, I had had teachers who were patient when I did poorly, and I have never forgotten what they meant to me at the time.

In the case of women students as opposed to men, there are both similarities and differences. Women also recognize conflict among authorities and feel powerless in grading situations, but they tend to think of true knowledge as originating within themselves and specific to themselves, what one woman told Belenky was her "infallible gut." While not yet ready to assert themselves before others, they start to make their own decisions. But logical and analogical processes seem to be associated with the male authority figures they now reject, and they resent being ordered to explain their decisions in "male" terms. It takes real teaching skill to show women students at this point that you are trying to give them methods as well as facts, and that when you are confronted with a new problem or question, you use these methods as tools. When you reach a dead end and realize an answer cannot be right, you admit you are wrong and start over with a different hypothesis. One of the best ways of doing this in class is thinking aloud, with the class encouraged to propose their own ideas as possible solutions.

As the later Perry levels begin, male students begin to understand that teachers use different forms of reasoning to try to deal with questions that have no answers. What is more, they see that they can use these methods for themselves. They tend to identify with the teachers and foresee that they will soon hold positions of responsibility. They can detach themselves from their work enough to see the errors in it. They also begin to see that they must make commitments to ideas, to majors, to ethical principles. All of these commitments involve anxiety. "What if my choice is wrong? Am I making a big mistake?"



With most women students the process is different. Belenky called it "gaining a voice." This means moving from the "infallible gut" to an outward, independent expression and assertion of self. They usually do not identify with their teachers, especially if they are male. Once they feel independent, and knowledge no longer seems inexpressible or someone else's property, development can take place. But instead of abstraction and separation between the knower and the known, women tend to learn through empathy with what they experience.

> I frequently thought that the students were either stupid or obstinate, when I tried to explain my criticisms of their work. They often felt I had personal malice against them, because they identified so much with their work.

Belenky called it the difference between "separate knowing" and "connected knowing." Often, old personal ties must be sacrificed to achieve independence, with accompanying anxiety.

Mentor relationships can form and be very helpful at this time. The idea of collegiality between students and faculty begins to emerge, and the rigid separation between faculty and student worlds begins to disappear. However, present research suggests that women students find it harder to establish mentor relationships, especially with male faculty, than male students do. This problem is soluble with good will and professionalism.

In the final Perry levels, men acknowledge ambiguity and uncertainty in many areas of their lives, but realize that there is opportunity for change, new learning within their commitments, especially their careers. They see teachers as fellow-seekers, no longer as authority figures, just as when Luke Skywalker goes back to see the dying Yoda in *Star Wars*. They are now ready to start teaching themselves.

Once again, with women, the experience is different. Although they make commitments, because they think more in terms of people rather than abstractions, they usually think of people rather than a job. As Belenky put it, "a life foreseen, rather than a commitment foreseen." They also realize that not everyone will accept their insistence on being treated intellectually as an equal and that their struggle will be lifelong.

Perry thought that the pattern of development he observed was recursive throughout adult life. Ideas that we thought unassailable are suddenly and powerfully challenged, and whether to abandon them or recommit ourselves to them can be just as agonizing as it was in our student years. Perry describes it as moving from a beloved, old house into an exciting but frightening new house. In the acquisition of the new there is grief for the loss of the old.

As a veteran teacher, I have to constantly remind myself that my students are experiencing this grief for the first time. Sometimes, in my efforts to tell students that everyone goes through this process, the students think I am trivializing their difficulties. Their experience is so immediate, their grief so strong, that they think I do not really care. Usually, I can convince them that I do, and that grieving is often growing.

*Bibliographical Note:* Needless to say, I have oversimplified the rich books cited here for reasons of length. I heartily recommend reading the original works: William G. Perry, Jr., *Forms of Intellectual and Ethical Development in the College Years: A Scheme.* New York: Holt, Rinehart and Winston (1970) and Mary F. Belenky, Blythe M. Clinchy, Nancy R. Goldberger, and Jill M. Tarule, *Women's Ways of Knowing: The Development of Self, Voice and Mind.* New York: Basic Books (1986).

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## RESEARCH WATCH

# Cognitive Apprenticeship: Teaching Inside Out

*"Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics."*

*Allan Collins, John Seely Brown, Susan E. Newman in* ***Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser,*** *ed. Lauren Resnick (Laurence Erlbaum, 1989) pp. 453-494.*

PAST EFFORTS TO UNDERstand and improve teaching have sometimes focused too largely on externals. Advice on modulating one's voice, on moving out from behind the lectern has its utility, but it's also a bit like treating the symptoms of a cold without recommending the wisdom of bed rest. One can hardly blame faculty who remain skeptical of efforts to help them teach more effectively that do not demonstrate—and help them form in their own minds—a more sophisticated understanding of the dynamics of teaching and learning.

The relatively new field of cognitive science appears to be developing that understanding. Many efforts to improve teaching have turned to the rhetoric of effective public speaking, focusing on the classroom as a kind of theater. The leading edge in cognitive research, however, suggests that the rhetoric of thinking may offer a better pattern. By externalizing both the inner discourse of expert or faculty thinking and the inner dialogue of student or novice thinking, cognitive psychologists say, faculty can show students "how to do it" in any discipline instead of merely telling them about the facts they've learned that students ought to know.

Currently, a body of recent research in teaching and learning has been pulled together in a comprehensive

model called "cognitive apprenticeship." The model is creating considerable interest among teaching and learning specialists not only because it demonstrates how the research fits together into an integrated pattern, but also because it shows this pattern being applied in three vivid portraits of actual teaching situations—teaching reading, college mathematics, and writing.

Ironically, the newness of cognitive apprenticeship lies in the rediscovery of an older way of teaching. Only in the last century, and only in industrialized countries, the developers of the model point out, has schooling replaced apprenticeship as the most common means of learning. Indeed, Allan Collins, chief author of the model, points out that it was not that long ago that medical education shifted away from an emphasis on learning the art of diagnosis in grand rounds and toward more classroom science instruction.

Something was lost, especially in undergraduate education, in the move toward didactic teaching and away from a learning environment dependent on observation, coaching, and successive approximation. Can what was lost be regained? Perhaps; especially if faculty realize that in conveying information and concepts about their subjects, they may only be telling students the half of it, the cognitive versus the metacognitive half, as a learning theorist might say.

A focus on content can leave key aspects of what faculty do inside their own minds invisible to students. Yet it's the internal processes faculty engage in in acquiring knowledge and carrying out complex tasks in their fields that students need to see if they're to gain understanding and share the excitement of different intellectual disciplines. In a sense faculty need to learn to think out loud, to externalize the processes they usually carry out internally.

Moreover, faculty need to have students think out loud as well. "It's amazing," says Collins, "teachers don't ever hear the thinking of students as they're trying to solve problems. They don't understand *how* students understand and typically they way overestimate what they've grasped." The aim of the cognitive apprenticeship model, he says, "is to get the thinking process out into the space between teachers and students where they can both see it."

Developing a conscious awareness of how one's mind operates and the kinds of knowledge it uses is the first step in discovering how to share what one really knows. For faculty, that step leads directly to a second, in which they understand the value of different teaching methods, seeing them not as performance tricks, but as shoes and extensions of their own mental processes.

Cognitive researchers describe the content of expert knowledge as falling into four main categories:

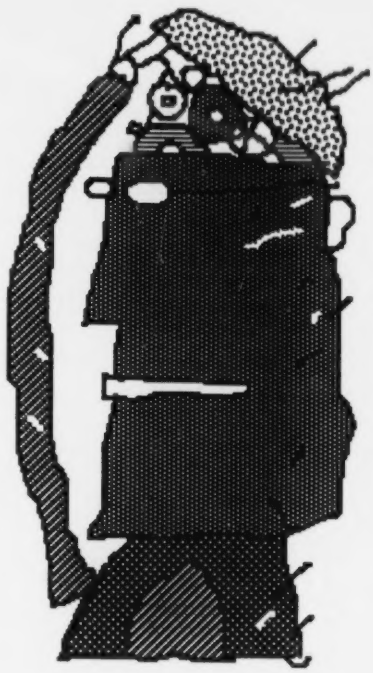
1. **Domain knowledge** includes the facts, dates, formulas, and basic concepts of a particular discipline. It's the material covered in textbooks and class lectures. But learned apart from realistic problems and the kinds of expert problem-solving strategies that faculty carry around unconsciously, domain knowledge tends to remain "inert" even in good students, say Collins and his colleagues.

2. **Heuristic strategies** are the "tricks of the trade" or general approaches to material that have proved valuable in the past, but which don't always work. For example, planning to rewrite the beginning of an essay so that it fits the final product is a standard heuristic strategy in writing.

3. **Control strategies** describe the process of knowing which trick of the trade to try first and when to drop that strategy and try a different one. They represent an expert's knowledge about how to manage the thinking process. They imply an on-going monitoring, diagnosing and correcting of one's own thinking.

4. **Learning strategies** are, in a sense, the sum of the other three types of knowledge. They are the knowledge an expert develops about how to learn.

Understanding the strategies of expert practice, say Collins and his colleagues, "depends crucially on understanding the way they are embedded in the context of actual problem solving." Thus, they admit, not all the strategies necessary in



complex learning can be captured and made explicit.

However, their research has found that master teachers convert students from audience members into apprentices by externalizing their expertise using these basic methods:

1. **Modeling**—performing a mental task in front of students in such a way that they are able to observe the processes needed to perform it and thus form a conceptual model of their own, one which includes heuristic and control strategies as well as domain knowledge.

An exciting example reported by Collins and his colleagues describes Prof. Alan Schoenfeld of the University of Rochester (who has written a good bit on teaching problem solving) working a math problem with two polynomials with "reversed" coefficients.

Schoenfeld's open thinking for the students runs like this: "What do you do when you face a problem like this? I have no general procedure for finding the roots of a polynomial, much less for comparing the roots of two of them. Probably the best thing to do for the time being is to look at some simple examples and hope I can develop some intuition from them. Instead of looking at a pair of arbitrary polynomials, maybe I should look at

a pair of quadratics: at least I can solve those." After solving the problem, Schoenfeld does a postmortem, examining the thought process and focusing on the points where breakthroughs occurred.

Sometimes strategies failed, and he met dead ends. That's important, Collins believes, because it helps students develop a belief in their own capacities. Seeing an expert struggle assures them that they aren't the only ones who flounder about and have to start over.

2. **Coaching**—observing students dealing with problems or texts and offering hints and guidance aimed at directing them toward expert performance. The faculty member puts down the burden of dispensing facts and concentrates instead on monitoring and diagnosing what students are doing with them, raising questions they may not have thought of or reminding them of overlooked aspects of the problem.

3. **Scaffolding**—closely related to coaching, scaffolding describes the support master teachers give students to help them carry out assigned tasks. The emphasis here, however, falls on an accurate diagnosis of students' current skill levels. The corollary of scaffolding is *fading*, the process of gradually withdrawing help and support as students become more adept.

4. **Articulation** refers to any means a faculty member uses to get students to self-consciously demonstrate their own thinking processes. "Which is the best summary of the novel and why?" a faculty member might ask, thus encouraging an understanding of critical process and the novel at the same time.

5. **Reflection** refers to methods that encourage students to compare their own thinking processes with experts, other students and eventually against their own internal model of expertise. Usually these methods involve "replaying" what a student has done either through a postmortem like the one the math professor performed on his own problem-solving or perhaps some activity using audio or video tape. Small group activity also generally encourages both reflection and articulation.

6. **Exploration** describes methods designed to push students beyond solving set problems. One of its chief aims in fact is moving students to a point where they are able to design their own problems within a given field and then solve them using the knowledge and cognitive skills they've acquired. Pushing students in this way forces them to realize that an important part of learning lies in reaching beyond what's already known.

To be able to reach that far, students must have developed what one theorist calls a "belief system" along with a body of basic information and a rather nimble set of control strategies to guide further explorations. Thus, real learning also implies and depends on a growing confidence in one's ability to know.

Students must have developed what one theorist calls a 'belief system' along with a body of basic information . . . Thus, real learning implies and depends on a growing confidence in one's ability to know.

"In some sense," says Collins, "a lot of our expertise as professors is tacit. We're unaware of it; we haven't articulated it to ourselves. Cognitive apprenticeship is aimed at creating problem-solving situations that will exhibit it to students. The other half of it, of course, is that when we get students to articulate their thought processes and we are able to see how they differ from ours, then, whether we have a complete theory of expert practice or not, we can see what to do to put students back on course."

*Allan Collins teaches at the Institute for the Learning Sciences at Northwestern University, Evanston, IL.*

**PROFILE**

# Time Travel: Personalizing the Eighteenth Century through a Personal Computer

HOW DO YOU TAKE MODERN undergraduates back 200 years or bring literature from the eighteenth century forward so they can understand what's going on in it? Professor Vince Liesenfeld has been struggling with that problem in his junior-level eighteenth-century English literature course at the University of Oklahoma for about 12 years. Last semester, after lots of other experiments, he came up with a new entree to the period using a personal computer and a database program.

"It's always been a challenging course to teach," says Liesenfeld, "because of the difficulty modern students seem to have with the syntax and so on, but also because the literature is so *referential*." Few periods in English literature remain so embedded in their time as the Restoration and the Eighteenth Century. Some novels, like Fielding's *Tom Jones*, have escaped, but for most students the poetry and prose—the focus of Liesenfeld's course—remain caged by history.

The methods Liesenfeld has used in the past to unlock that cage have included requiring students to read Donald Greene's *The Age of Exuberance* and Richard Schwartz's *Daily Life in Johnson's London* as cultural background. That helped. Students got a handle on some of the most basic references. They learned who the "Dissenters" were for example and could begin to see how politics and religion were intertwined. But in reading something like Pepys's *Diary*, they continued to be put off by what seemed to them a preoccupation with political and economic matters. Their modern minds wanted to know more about Pepys's emotions.

"When we got to [Dryden's] *Absalom*

*and Achitophel*, the course would change radically in terms of the students' confidence in dealing with the text," says Liesenfeld, "and the class never recovered." The poem, an extended political satire, depends not only on knowing the factions in the political and religious thinking of the day, but also on an understanding of the biblical story Dryden uses to mask his contemporary references.

"Students didn't know what would constitute an *understanding* of that poem," says Liesenfeld. "Would it mean knowing all the allusions? They'd see a couple of lines of text in their anthology and a thick undergrowth of footnotes below and not know where to start." As a result, they tried to understand the poem 'in itself.' "I don't know how *I* could do that," he says.

Having tried to minimize obstacles with the background reading, Liesenfeld began looking for ways to use obstacles to increase student involvement with the text. And that's when he hit on the idea for the "Hypothetical 18th Century Reader Characteristics Form," an extensive questionnaire which he had students complete at the end of the first two weeks of class, weeks he now devotes exclusively to cultural background reading.

The form asks students to make a great many choices. "Students make up a name for their reader," says Liesenfeld. "They laugh, but then they see, 'Well it does make a difference if I put down a woman's name instead of a man's. It may affect my income, education, personal interests.' Last names become an issue, too, because they have associations with national origin and ethnic character which in turn have political and religious implications."

Students had to have their fictional readers declare their marital status, discovering in the process that there was no legal divorce in those times for all practical purposes. They declared their chief source of income from a list of 15 sources that includes crime and which lists "teaching" below "servant." And they had their readers decide, as individuals, where they think sovereignty properly resides—with the monarch? the legislature? the aristocracy? the middle class? or the people at large?

Liesenfeld entered all this information into a database program on his personal computer and then generated an alphabetical list of fictional readers and their characteristics for the class. Several times throughout the semester he created different lists by sorting it according to different characteristics. For example, he asked the class to discuss, in small groups, what a particular group of fictional readers who had listed painting as their top personal interest would think of Dryden's "Ode to Anne Killigrew" in which Killigrew's interest in painting has certain political implications.

Important and fundamental insights sometimes sprang from what seemed exceptional cases. For example, one fictional reader was Thomas Brown, a Lutheran, who stood 5'8", weighed 153 pounds, lived in a major city (not London) in the southeast of England. His health was good, his student creator said, even though his income derived from a career in the army. But how could a Lutheran have a career in the army, Liesenfeld asked? A Lutheran couldn't pass the Test Act by taking communion in the Church of England; legally, he couldn't be a career army officer.

It didn't take students long to realize that Brown could lie and get away with it. That insight, to Liesenfeld's delight and surprise, opened a fuller awareness in students of how authors commonly "lie" in the literature of the period, disguising their own positions through many kinds of irony and persona.

Students weren't required to declare which fictional reader was theirs. They could make the reader as like or as different from themselves as they wanted, but as they read the literature, Liesenfeld encouraged them to think about themselves as they did their fictional readers, as individuals made up of particular interests and inclinations. "Which sections in *Newsweek* do you read first?" he asked them, "George Will or the movie reviews?"

"I was trying to encourage an acceptance of the hypothesis that they could read a text and find in it a different combination of important and unimportant elements that are different from the reader sitting next to them," says Liesenfeld. "I wanted them to see that there was no *one* reading, but that there were *many* ways to understand a text."

"I've come to feel," says Liesenfeld, "that the process of understanding depends *entirely* on context, but also that context can be formulated in almost *any* conceivable way. The process of understanding, it seems to me, is a process of forming hypotheses about relationships between or among things at a very general level. Students were looking for points to relate to, but they were overwhelmed and afraid of choosing 'the wrong points'."

As an exercise, Liesenfeld sent his fictional readers to an eighteenth-century A&P and asked them who was likely to buy *Absalom and Achitophel* off the news stand. "The responses are unpredictable," says Liesenfeld, "but any response will do to get the discussion going." At first students thought the Dissenters would buy it because they were more interested in the Bible than members of Charles II's worldly court. But then they began to consider the political purpose of the poem—to endorse Charles's restoration and denounce the architects of the Popish Plot—and changed their minds.

This was the general pattern of response to the literature which the database helped create, says Liesenfeld. "Students came to see how these individual, but stereotyped characters both limited and enriched their readings of the texts just as their real characters do. If they came from a family with significant conflict between father and son, they will bring a different experience to reading *Absalom and Achitophel* than someone else."

On the examinations, Liesenfeld gave students the option of answering some essay questions as their fictional reader. About a third of the class gave it a try. When they did, he says, they handled their answers thoughtfully and did a good job of engaging the texts. "And this was by students who had been having trouble with the text before," he adds. "That third included some of the students I've lost before," he says, "and I was very pleased to see that."

*Contact:* Professor Vince Liesenfeld, Department of English, University of Oklahoma, Gittinger Hall, Room 113, Norman, OK 73019.

## ERIC TRACKS

ERIC, THE EDUCATIONAL Information Resource Center, is the most comprehensive educational database in the world. And as with anything of such size, it can be daunting. The database includes all kinds of material from the most sophisticated to the most basic. Sifting it, monitoring the number and quality of documents and journal articles on selected topics can give a valuable indication of how a particular instructional theory or practice is developing within the academy.

The following is the first in an ongoing series of columns which will examine a sampling of the best, latest and most provocative material in the database on a particular teaching and learning topic. Given the national concern about our ability to teach students how to learn, the concern about the shifting demographics of the student population, and the implications of those shifts for the learning environments needed by an increasingly diverse student population, we decided to look first at literature on learning styles and learning strategies.

# Learning Styles: Theory and Practice

*Complied by Judi Conrad, Associate Director, ERIC Clearinghouse on Higher Education*

### Discipline Specific Investigations of Learning Styles

***"Learning and Teaching Styles in Engineering Education."***
Felder, Richard M.; Silverman, Linda K. *Engineering Education*, v78 n7 p674-81 Apr 1988. ERIC Document Number: EJ 372622.

Drawing upon C. G. Jung's theory of psychological types, David Kolb's learning inventory, and the Myers-Briggs Type Indicator, the authors suggest that engineering instructors who modify their teaching style so that it addresses the poles of the learning preference continuum (e.g., sensory and intuitive, deductive and inductive, etc.) can create an optimal learning environment. Against an overview of preferred learning styles and the corresponding teaching styles of greatest effectiveness, the authors present five questions designed to identify students' learning styles and five designed to identify one's own teaching style or a student's preferred teaching style.

"Most engineering courses other than laboratories, emphasize concepts rather than facts," say the authors, "and so favor intuitive learners [while] most engineering students are sensors . . . suggesting a serious learning/teaching style mismatch; most college students are visual while most college teaching is verbal; and most engineering students are inductive learners while most college teaching is deductive."

Describing the differences between active and reflective and sequential and global learners, the authors conclude with a list of practical teaching techniques designed to address all learning styles.

Current deficits in the math and science fields influenced our decision to profile this article; however, we selected it mainly because it successfully discusses learning style theory in the context of a specific discipline and provides concrete suggestions on how to identify student learning styles and develop appropriate teaching responses. Moreover, the principles set forth for adapting teaching styles to learning styles appear to be applicable across disciplines. And finally, it includes a bibliography that is both extensive and useful.

### Application of Assessment Tools

***"Personality Preferences and Foreign Language Learning Related Learning Strategies."***
Moody, Raymond *Modern Language Journal*, v72 n4 p389-401 Win 1988. ERIC Document Number: EJ 384114.

Facing the challenge of a requirement that all students at the University of Hawaii be required to take two years of a foreign language, the author undertook comparing the personality types and preferred learning styles of current foreign language students with those of the general student population. His aim was to assess how well current language teaching might work with the general population and to plan the most effective teaching strategies to apply in working with students unlike the elective majors. To this end, Moody administered the Myers-Briggs Type Indicator to the language students, and then compared the results with those of science, engineering, and business students.

The Myers-Briggs Type Indicator (MBTI) is designed to measure differences on four bi-polar scales: Extraversion-Introversion; Sensing-Intuition; Thinking-Feeling; and Judging-Perceiving. Drawing upon a synthesis of research on the MBTI and subsequent work on learning styles, the author summarizes the learning preferences associated with the bi-polar dimensions of the MBTI. For example, thinking personality types prefer objective approaches, while feeling types prefer the

subjective. Judging types prefer to work in a steady orderly fashion; perceiving types favor flexible, impulsive, and freewheeling learning environments.

The author contends that much formal education at the college level, including foreign language instruction, favors the introverted, intuitive, and judging types leaving the extroverted, sensing, perceptive types at risk of failure. Indeed, as predicted, results indicated that language students included many more intuitive and thinking types than the larger student population. Asserting that under the existing system, the language departments would meet the needs of only about half of the students, Moody makes a gallant plea for providing a variety of learning activities, activities that would allow students to use their most comfortable modes of learning for at least some of the time and activities that help them expand their learning repertoire the rest of the time.

Moody offers practical suggestions based on a correlation of majors, personality types and preferred learning styles. For example, business students, he points out, favored sensing by a ratio of more than two to one, suggesting that workbooks, pattern drills, and simple transformations would be more acceptable to them than the complexities of translation and the distinction between an "intimate" and a "formal" you.

The significance of this article lies in the nature of the problem investigated and its policy implications for an entire language department. The problem is real: what teaching strategies need to be applied to students who have for all intents and purposes been forced into a discipline that was not of their choosing. The article provides a thorough and thoughtful approach to a language teaching problem that may very well affect growing numbers of institutions as the need for more than one language accelerates in our country and in an ever-shrinking world where multilingualism is becoming increasingly important.

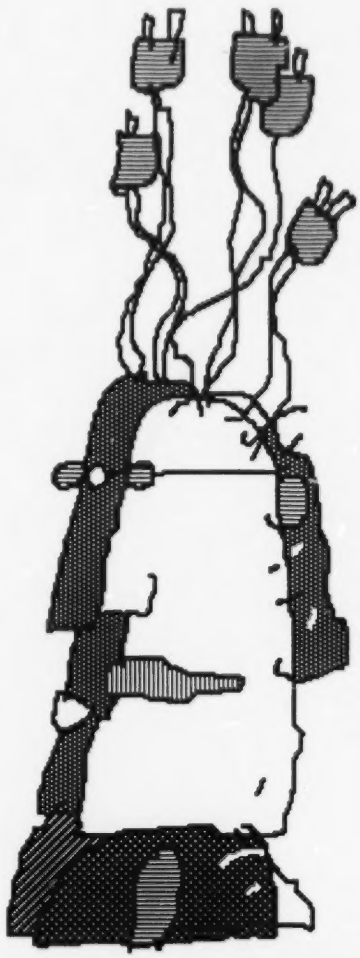
***"Using Kolb's Learning Cycle to Improve Student Learning."***
Stice, James E. *Engineering Education*, v77 n5 p291-96 Feb 1987.
ERIC Document Number: EJ 357319.

The Kolb Learning Style Inventory consists of a 12-item paper-and-pencil instrument which can be completed and scored in 15 minutes. Scores are obtained for each of the four Kolb learning stages (concrete experience or "feeling"; reflective observation or "watching"; abstract conceptualization or "thinking"; and active experimentation or "doing"). Scores are computed and charted on the Kolb Learning Style Grid which identifies students as:

1. divergers (who prefer concrete experience and reflective observation—artists, actors, planners, social workers);
2. assimilators (who prefer reflective observation and abstract conceptualization—teachers, writers, librarians, mathematicians);
3. convergers (who prefer abstract conceptualization and active experimentation—engineers, physical and computer scientists, doctors);
4. accommodators (who prefer active experimentation and concrete experience—bankers, public and educational administrators, politicians).

Citing various studies which indicate that learning is enhanced by involvement in more than one of the learning stages in Kolb's cycle, the author provides a rationale for involving the student in all four stages of the learning cycle. Asserting that many mathematicians are assimilators while many engineering students are convergers, the author uses an explanation of differential equations to illustrate how knowledge of Kolb's theory might improve the way instructors present information to engineering students.

We selected this article because it provides an excellent, concretely grounded orientation to the Kolb Learning Style Inventory. In other words, it applies an important theory in a practical procedure easily replicated by anyone seeking to improve instruction in any discipline.



*"An Examination of the Relationship Between Critical Thinking and Academic Success on a University Campus."*
Steward, Robbie J.; Al-Abdulla, Yousef, 1989. ERIC Document Number: ED318936.

The researchers set out to look at the relationship between critical thinking ability and academic performance. In the end they unearthed differences in what is expected of women and what is expected of men in their college performance.

Not all aspects of the ability to think critically contribute equally to overall academic performance, they found. The abilities to infer accurately, to interpret, and to evaluate arguments all significantly affected overall grade point averages (GPA), but only inference and evaluation contributed to the nearly 10% variation within the GPAs of the studied group.

Does this mean that the ability to interpret is not as highly valued by college teachers as the ability to infer or evaluate? Is it harder to test for?

The ability to infer carries males a long way in college. It was the only skill this study found males needed to achieve higher academic achievement. Females on the other hand needed to show proficiency in both deduction and evaluation of arguments to achieve the same level of success. The researchers conclude that even where ability levels are the same, what is required for academic success by males and females differs significantly.

We include this study as evidence of the sometimes unexpected revelations about institutions and academic cultures studies of students and their learning styles can produce. The inquiry into possible gender-related differences in learning styles continues, stalked at every turn by a sense of how expectations may have shaped those differences.

• • •

In 1987, the ERIC Clearinghouse on Higher Education published *Learning Styles: Implications for Improving Education Practices.* In it, authors Charles S. Claxton and Patricia H. Murrell reviewed the research on learning styles, suggesting how information on learning styles might be used outside the classroom, pointing out how the academic gestalt is at odds with collaborative models of learning, and noting some steps institutions might take to promote more effective learning based on learning style theory.

The monograph is available for $15.00 postpaid from ASHE/ERIC, One Dupont Circle, Suite 630, Washington, D.C. 20036-1183.

• • •

Our review of the literature leaves us with three very general, but useful conclusions:

1. Regardless of nomenclature or schema, it seems clear that different students do have different identifiable learning styles.
2. Most academics, on the other hand, share a common learning style, and tend to teach from a somewhat unified perspective.
3. Recognition of individual learning styles on the part of both learner and teacher enhances the learning experience and increases the amount of learning.

## Next Steps

We welcome your responses to our first *ERIC Tracks* column. Do you find the short bibliography and analysis of interest? Do you believe you might incorporate any aspect of learning style theory in your own instructional practice?

We also welcome suggestions for future topic searches related to teaching and learning and instructional practice. **Write to:** James Rhem, Executive Editor, *The National Teaching & Learning Forum*, 625 W. Lakeside Street, Madison, WI 53715. ➢

**TA FORUM**

# A National Survey of TA Training

A SURVEY BY TWO RESEARCHERS at Central Michigan University finds that despite increased attention to the importance of undergraduate teaching in American higher education, only 25% of the colleges and universities who use TAs offer any sort of TA training and only 13% require the training they offer.

While some institutions mount a one-week paid training and orientation and some provide on-going consultation throughout the year, the average campus-wide training effort consists of a one-day orientation.

The researchers—Pamela Gray and Nancy Buerkel-Rothfuss of the Department of Speech Communication and Dramatic Arts—presented their findings at the Second National Conference on the Training and Employment of Teaching Assistants in Seattle.

The survey, conducted during the 1986-87 academic year, asked questions of graduate deans, department chairs, and of both experienced and new TAs. Among the findings some numbers were surprising and others were not. For example, not surprisingly 87% of the TAs surveyed taught freshman and sophomore classes. However, nearly two-thirds of the TAs responding to the survey said they were the sole instructor for the courses they taught.

Around 50% of the academic departments surveyed offered some sort of TA training. And in general TAs thought more highly of training efforts carried out at the departmental level than they did of campus-wide orientations.

TAs tended to think highly of themselves as teachers. Only 5% of incoming or new TAs rated themselves less than average in teaching. Still, while they were highly confident and motivated about their teaching, a majority of TAs regarded training as very important. They were eager to have more training, especially in day-to-day communications problems in the classroom rather

than in the policies and procedures and grading systems of their institution which loom large in most one-day orientations.

(For further information on the survey, contact the authors at Central Michigan University, Mt. Pleasant, MI 48859, Phone: 517-774-3177.)

# Handbooks for TAs: An Overview and Some Suggestions for Using and Improving Them

*Mary Bort*
*Graduate Teaching Assistant*
*Department of Speech Communication*
*University of Nebraska—Lincoln*

**Mary Bort worked with the researchers from Central Michigan University in their national study of TA training, reviewing and constructing a content analysis of TA training materials. Handbooks were common to many training programs. Below she surveys the good, the bad and the not-so-nice among them from the point of view of a working TA.**

HANDBOOKS ARE A POPULAR and useful way of informing TAs about their duties. Sometimes they come from specific academic departments; at others, from central administration. They've become so popular as a means of orientating new TAs, they deserve closer scrutiny, because frankly many of them need improvement.

Current handbooks cover three general content areas:

1. policies and procedures, terms of employment, etc.
2. ideas and advice about teaching, and
3. additional resources and services on campus.

As you might expect, handbooks vary in their treatment of these areas. Some are strong and clear on policies, but brief and general on teaching. Unfortunately, some handbooks ignore teaching and resources entirely and concentrate exclusively on the rules and regulations governing employment. The very best handbooks cover all three.

Perhaps campuses with handbooks which seem to focus only on policies are addressing a TA's orientation to teaching in some other way, but it's disturbing to think that there are new TAs "out there"—sometimes at major schools—being given little guidance about teaching. Knowing policies is important, but for an inexperienced TA information about teaching practices is invaluable.

Happily the majority of current TA handbooks devote at least a portion of their contents to teaching strategies. The best provide TAs with discussions of pedagogy, lecturing and discussion tips, laboratory procedures, lesson planning, syllabus construction, first-day-of-class strategies, and ideas for interacting with students one to one. Many of the best handbooks reprint material from guides prepared on other campuses. For example, a wonderful TA handbook from Syracuse University effectively utilizes materials from more than ten other sources—along with its own original material—to create a collection of useful ideas for new TAs.

Other handbooks supplement material on teaching and summaries of policies and procedures with guides to other resources available to new TAs. Some, like the handbook from Northwestern University, manage to make the additional material actually sound exciting and worth consulting. Along with details about methods for teaching and some information about TA appointments, Northwestern's handbook includes an annotated bibliography so that TAs will be able to obtain additional information about many of the topics discussed in its pages. The handbook from the University of Delaware includes twenty pages of additional resources available to TAs on campus along with clear explanations of each and how and when to consult them.

But the question I have about even the best handbooks is: How are they used? From personal experience I know that some TAs are simply handed a handbook and told, "Read this." During the busy time of preparing for the start of a new semester, I did as my TA comrades did—I put the handbook on my desk and ran off to take care of pressing concerns. Later, largely because I was involved in a project reviewing such materials, I sat down and flipped through the handbook. After talking with my fellow TAs, I discovered I was in the minority, since few of them had even opened the book.

It's distressing to think that some of the informative and enlightening handbooks I have examined were given to TAs and then stuck away in filing cabinets, if not the circular file.

Good handbooks can facilitate discussion as well as disseminate information, and many handbooks would be more ideally used in conjunction with some sort of training sessions or meetings with TAs. Again, that's been my personal experience. In a different situation, my fellow TAs and I were given a handbook and then, at meetings throughout the semester, we were led through its pages in discussions that highlighted certain points and added detail to general sections. The meetings encouraged us to make use of the contents of the guide; they gave life to the handbook as a reference.

If a department or university wants to let its handbook do all the work of orienting TAs, it needs to keep its audience in mind as it puts the handbook together. The usual rules of good communication apply, except that without the support of some sort of seminar or discussion meetings, the stakes are higher. Capture the attention of the TAs, avoid ambiguity, and don't assume that the TAs will already know what is being explained. Include what needs to be included, including references to other sources of help available on campus. And, however much you might like to, don't assume that a TA will go out of his or her way to look up other books or articles. If something is really important, include it in the handbook.

Remember your audience in crafting a handbook, but also remember the message you want to convey about teaching as well as the information you want to impart. In reviewing TA handbooks from all over the country, there were times when I found the information was presented in such a dry or even intimidating manner it was difficult for me to continue reading. Some handbooks contained a great deal of important and useful information, but the formal and stodgy writing seemed to send out the message that teaching wasn't enjoyable.

When it comes to good examples, *The torch or the firehose?* a handbook from MIT, stands out in my mind. The necessary information is there, but it is presented with such creative flair! The handbook "talks" to the TAs in a conversational and supportive manner. Cartoons are integrated with the text, so that a cast of characters begin to be associated with certain situations that a TA is likely to encounter. I truly enjoyed reading through this handbook (a rare occurrence in reviewing dozens of such guides). I imagine that TAs at MIT read through the book as well and learn things that they need to know— which is the point of a TA handbook, isn't it?

I'm sorry to say that a handbook from a math department which I reviewed stands out in my mind for opposite reasons. Rather than stating that a three credit course usually has a midterm and a final, the handbook provided a formula to follow so that the TAs could compute the expected number of exams. With "n" being the number of credits for the course, TAs were told to use "n-1" in determining the total number of exams for the classes they would be teaching. If the handbook had been written in a humorous style, I would have thought that the whole business of the formula was tongue-in-cheek. Sadly, that wasn't the case. Why make things so formal and perhaps more complicated than necessary?

A good TA handbook can be very helpful, but in drafting one, keep in mind that the TAs for whom it is being created are nervous and excited and curious, but they're also busy getting settled into the ins and outs of life as a graduate student. They need more than an employee's manual of procedures and policies. And if a handbook for them is to stand alone as a teaching mentor, it needs to be livelier than the average textbook or it won't be read.

**In the next issue . . .**

- **Parker Palmer on "The Courage to Teach."**
- **Dr. Chris Nash of the University of Guelph, Ontario on "Scholarly Teaching."**
- **What effective teaching for dyslexic students teaches everyone about effective teaching.**
- **Cognitive Apprenticeship Part II—A Look Inside the Classroom.**

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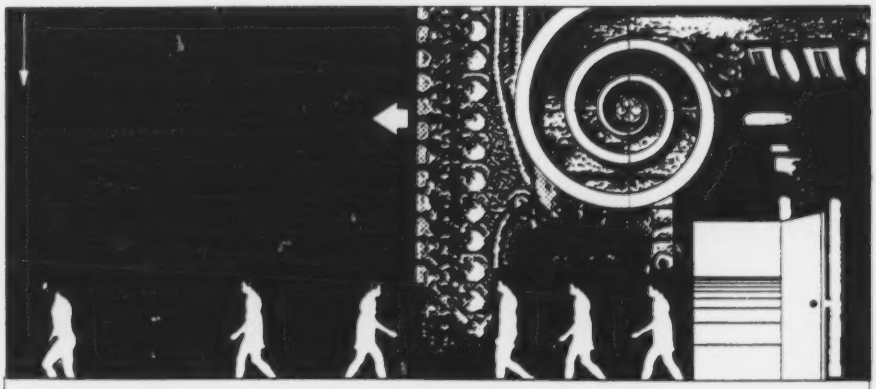
THE NATIONAL TEACHING & LEARNING FORUM

Volume 1, Number 2 1991

HE 025 844



# The Courage to Teach

*Parker J. Palmer*

## Teaching in the Face of Fear

IF WE WANT TO IMPROVE THE quality of college teaching, a million workshops on methodology will not be enough. Good teaching does not come from technique. It comes from the identity and integrity of the teacher. If we want to teach well, we must learn more about the human dimensions of our craft—about the inward sources of our teaching, about the claims it makes on our lives, about our relations with our students, about a teacher's wounds and powers.

When we enter the conversation about teaching not through the door marked "How To Do It" but through one marked "The Human Condition," we discover a new world of discourse, a world that will challenge but also reward us if we are willing to engage what we find there. When I first opened that door, I quickly saw what I would need to confront—and its name is fear. When I teach poorly, it is not because of poor technique but because I have allowed fear to get the upper hand. In the bad classrooms I suffered as a student, fear nearly always lurked backstage. In fact, the culture of the academy itself is as fearful as any I have known. Education's nemesis is not ignorance but fear. Fear gives ignorance its power.

We are always teaching in the face of fear; that is why we need "the courage to teach." This fear has at least three sources: It comes from our dominant way of knowing, from the lives of our students, and from our own adult souls. In order to learn more about the kind of courage it takes to teach, and teach well, I want briefly to explore these three forms of fear that too often paralyze education.

## I. A Fearful Way of Knowing

Objectivism, the academy's most prized way of knowing, is marked by its insistence that only at a distance can we know things truly and well. Objectivism imagines that by removing ourselves from nature or history or a text we can make truth-claims untainted by any personal bias—a fantasy, but a persistent one. This mode of knowing has been advanced with such arrogance that it is difficult to see the fear behind it. But objectivism is riddled with fear: fear of subjectivity, and fear of the demands that relational knowing might make on our lives.

Our fear of subjectivity breeds teaching that deals more in external facts than in inner wisdom. That kind of teaching creates the most dangerous creatures on earth: people who know much about the outer world but who

know little about their inner selves, who have technical competence but no understanding of their own drives and desires. Our fear of relational knowing breeds teaching that tries to give us power over the world rather than mutuality with it. That kind of teaching makes us into something even more dangerous: people who want to transform the world but who refuse to be transformed. "Knowledge is power," we say with pride. But an education that puts us "in charge" is not so much about power as about fear—fear of the world itself, and of how our lives might be changed if we let the world talk back to us.

The courage to teach means defying these objectivist distortions and presenting the life of the mind for what it is—not a way of removing ourselves from things, but a way of recovering relatedness where it might otherwise be lost.

> Objectivism is riddled with fear: fear of subjectivity, and fear of the demands that relational knowing might make on our lives.

Why does an historian think about the "dead" past? Not to kill it off, but to bring it to life, to help us understand our links with that which seems long-gone. Why does a biologist think about voiceless nature? Not to muffle it more, but to give it voice so we can hear what it needs from us. Why does a literary scholar think about "fictional" works? Not to distance them from reality, but to show that reality can never be understood except in concert with the imagination.

Courageous teachers will find ways to overcome the objectivist fear of feeling and relationship, ways to draw students into community with every subject of study. They will go beyond one-way education in which we look at the world and change it. They will help students understand the daunting words of the poet Rilke: "There is no place at all that is not looking at you—you must change your life."

## II. The Fear in Our Students

When I ask faculty to name the biggest obstacle to good teaching, they often say "bad students." The hallmark of bad students, known to all who teach, is silence: that vast, stupefying, terrifying silence that comes over our classes whenever we ask a question. When I ask faculty what they think the silence means, they usually interpret it as a sign of indifference, cynicism, or hostility—or they suggest that their students are essentially brain-dead, due to the impact of mass culture on their lives.

Because this diagnosis leads to educational "cures" that are easily as cynical as the disease, we need an alternative diagnosis, and a powerful one is at hand. The silence of our students is the same silence we have known in other settings: It is the silence of blacks in the presence of whites, of women in the presence of men, of the powerless in the presence of people with power. It is the silence of marginal people, people who have been told that their voice has no value, people who maintain silence in the presence of the enemy because in silence there is safety. Student silence is normally not the product of ignorance or indifference or cynicism. It is a silence born of fear.

Recently I was teacher-for-a-day at a midwestern university. Thirty students attended my class; twenty-nine of them may well have been ready to learn. But in the back row was the one I call "the student from hell." His cap hid his eyes. His jacket was snapped shut. He had achieved an anatomically impossible supine position in his desk-chair, and no notebook or pencils were in evidence. I made the classic mistake of the greenest teacher: I ignored the twenty-nine and became obsessed with drawing out the thirtieth. And I failed. I left the class angry at him, sorry for myself, and eager to flee the campus and return home.

But before I could leave, I had to eat dinner with the president and some of the faculty, all of whom wanted to talk about "good teaching." Feeling like a fraud, I was relieved when dinner ended and the president ushered me to the college van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**The National Teaching & Learning Forum** is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education.
One-year individual subscription: $39.

Application to mail at second class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:
**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, D.C. 20036-1183



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which was to haul me to the airport, ninety minutes away. I was relieved, that is, until I got into the van and discovered that my driver was "the student from hell."

But no sooner had we pulled out of the driveway than my driver began to talk. His father was a laborer who thought that his son's professional dreams were nonsense: Had I ever been in that position, he wanted to know, and what would I advise him to do? On and on he talked, I talked, we talked—about family, education, friendship, values, and vocation. We had that rare and precious thing, a real conversation.

I hope never to forget that students from hell are made, not born, made by discouragements that have filled them with fear and spawned the sullen anger fear often hides behind. The courage to teach is not to ignore or punish these voiceless ones, but to find ways (in the wonderful words of the feminist theologian Nelle Morton) to "hear them into speech"—for their own sake and for the sake of the truths that the rest of us need to hear.

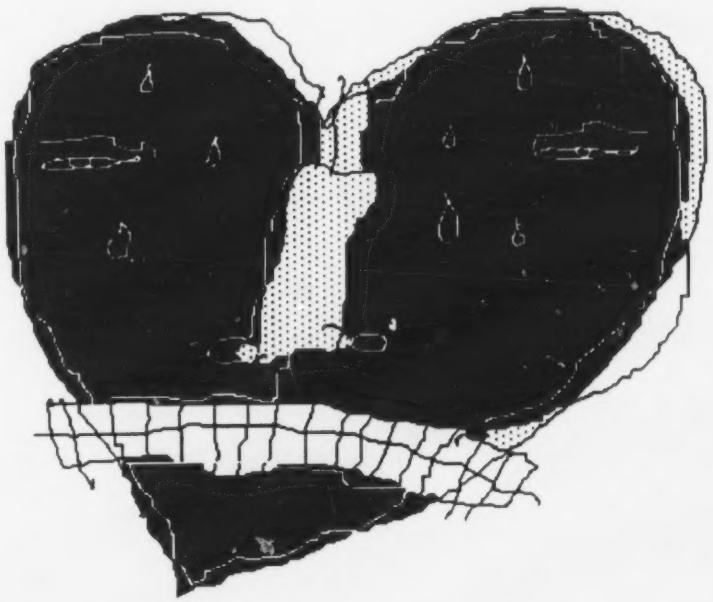
> Even as the young need our guidance, we need their vitality to help us live fully and well.

## III. Our Own Fearful Hearts

"Writing is easy," someone once said. "You just sit down and open a vein." Teaching is an equally vulnerable act, performed, as it is, at the dangerous intersection of the public and the personal. To teach well, I must reveal things about which I care deeply—not the intimate details of my life, but subjects that I find crucial and compelling, that have helped shape who I am. The courage to teach is the courage to risk the judgment that comes when I expose my passions to public scrutiny.

When we talk about the scrutiny that faculty fear, we think most often of peer reviews made to determine raises, promotions, and tenure. But I think there is another source of fear in us easily as powerful as peer judgment but hardly ever named: our fear of the judgment of the young. Nature decrees that youth be dependent upon age; human nature decrees that the converse be true as well. When the young do not consent to be mentored by the elders, something vital has been taken from the elders' lives.

My story about "the student from hell" is only partly about his fear of the classroom and his need to be "heard into speech." It is also about my fear of him and my failure to deal creatively with our relatedness. It is painful when our students seem to put us beyond the pale, to view us as irrelevancies, irritants, the enemy. Some faculty respond by pandering to students. Others insist that student opinion means nothing to them; they often strike me as teachers with old, deep wounds bandaged in layers of protective cynicism.



Psychoanalyst Eric Erickson says that health in middle-age (and all teachers are middle-aged) means choosing "generativity" over stagnation. Cynicism and pandering are forms of stagnation, responses borne of fear. To be generative is to turn around and help nurture the new life emerging behind our backs. Health comes when we have the courage to acknowledge that, even as the young need our guidance, we need their vitality to help us live fully and well. When we have the courage to teach in that spirit (and to accept the vulnerability that comes with it), we have planted the seeds of authentic community between those who teach and learn.

Authentic community—with our subjects, with our students, with our fellow teachers, and with our own souls—is at once the empowering outcome and renewing wellspring of the courage to teach.

*Dr. Palmer, author of* The Active Life: A Spirituality of Work, Creativity, and Caring *(Harper & Row, 1990), lives in Madison, Wisconsin.*

## Submitting Manuscripts

We welcome manuscripts from readers on teaching and learning. Articles may address any aspect of the topic(s), and may be discipline-specific or general in nature. However, authors should keep a diverse readership in mind.

Submissions may not exceed 1500 words, except in very unusual circumstances, and should be shorter whenever possible.

Manuscripts may be submitted either in typescript (double-spaced, 250 words per 8.5 x 11 page), or as ASCII text on a floppy disk formatted for MS-DOS computers.

Editorial submissions should be mailed directly to James Rhem, Executive Editor, *The National Teaching and Learning Forum*, 213 Potter Street, Madison, WI 53715.



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# Scholarly Teaching: From Image to Pitfalls

*Chris Nash*
*Vice President Academic*
*Athabasca University*
*Alberta, Canada*

IN 1989 WHEN I FIRST HEARD Ernest Boyer speak of "scholarly teaching," I realized that the guiding image for the University of Guelph's Teaching Assistant (GTA) Training Program was already a buzzword in the U.S. But as I have heard the term used since, I have realized that unless we are careful, the idea will not enhance the status of teaching at all. Unless we reflect on what we mean by "scholarly teaching," we shall simply reinforce the image of teaching as the runner-up to research.

At the heart of the problem, in my opinion, is a fundamental mistake, namely using "scholarship" as a synonym for just one set of activities—research. The confusion of scholarship with research was probably born of our colleagues for whom research is their scholarship. But the confusion is eagerly fostered by the teaching development offices across North America that demonstrate their acceptance of the scholarship-as-research concept by devoting most of their resources to research into university teaching.

In higher education we value "scholarship". We also claim to value teaching. Yet we design annual report forms that segregate the two and reveal a very different set of beliefs. Typically, categories on those forms run something like this: "Teaching," "Research and other Scholarly Activity," "Administration," and "Community Service."

When academics and academic leaders promote the idea of "publishing about teaching innovations" in order to show scholarship in teaching, they make a related mistake. They assume that a professor becomes a scholarly teacher by metamorphosis (through the publication of research findings) into an educational researcher. But whilst educational researchers may be scholarly teachers, and research may be scholarship, these are not necessarily symmetrical relationships.

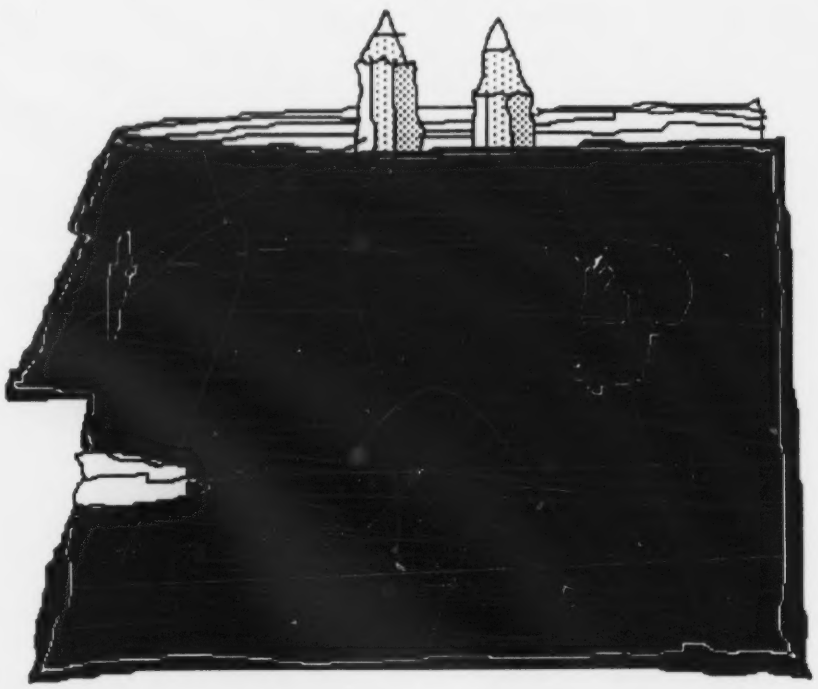
We understand our worlds insofar as we are able to categorize appropriately. Our categories focus or distort our perceptions. We can choose our categories and so modify our perceptions. Thus, by rejecting the facile equation of scholarship with research, we can change the way we see and live our academic lives in the university.

We currently use a single category system that equates "scholarship" with "research" and contrasts it with other faculty activities. A two-tier system would have a superordinate category, "scholarship," allowing us to explore how all of our faculty roles could be played out in either a scholarly or in a non-scholarly fashion. How then might we distinguish scholarly from nonscholarly ways of doing things? Our conception of research plays an important role in describing scholarliness, but, in a two-tier system, it no longer plays the role of synonym. Instead it serves as but one example of scholarship.

## What do we mean by "scholarly"?

If scholarship is not synonymous with research, what is it? Since research is so well-accepted as a scholarly activity, perhaps we can derive the basis for a useful definition of scholarship by isolating those qualities of research that we understand to be "scholarly." That is the approach we took at the University of Guelph. In developing the following working definition, we sought an image to guide the creation of a course designed to prepare graduate students who are currently GTAs for a future role as professors. We arrived at our definition not in isolation, but through consultation and team-teaching with 20% of the faculty, none of whom are educational researchers. As scholars we shall doubtless revise our definition as we play out its implications for our various faculty roles. But for the present, we define scholarly activity as follows:

Scholarly activity is informed by a changing body of theoretical and procedural knowledge, shared with various



professional and lay publics and judged against criteria arrived at by consensus within appropriate collegial groups.

What difference should such a description make for faculty, GTAs, and teaching development offices? What difference could it make to the status of teaching? To answer these questions we built a model of scholarly teaching by asking further questions of our definition. What are the knowledge and skills, the theoretical and procedural knowledge bases, that might be required for scholarship in teaching?

## "Informed by a changing body of theoretical knowledge..."

We asked what facts, concepts and theories the scholarly faculty member knows about. Scholarship requires an attitude of commitment to questioning the given. Our goal for a graduate course in college and university teaching as a scholarly activity was "to open minds, not to fill them."

Essential factual material would include university academic regulations and the fact that every institution has such policies that faculty must learn about so as to be able to change them if necessary to support scholarly teaching. Examples of conceptual questions included "What is... "a seminar," "the function of the laboratory studies in teaching and learning," "plagiarism," "validity" and "reliability," "a concept" and "understanding."

Our future professors should be aware that there are a variety of research fields whose theoretical explanations are more or less directly relevant to the business of improving adult learners. Theories faculty have found useful included elements of Learning Theories, especially feedback and reinforcement, Cognitive Developmental Theories—especially the metacognitive processes that can enhance adult learning, and Small Group Theory as it might relate to seminar leadership. Issues to be explored included academic misconduct, faculty and GTA teaching roles, and student responsibilities for their own learning.

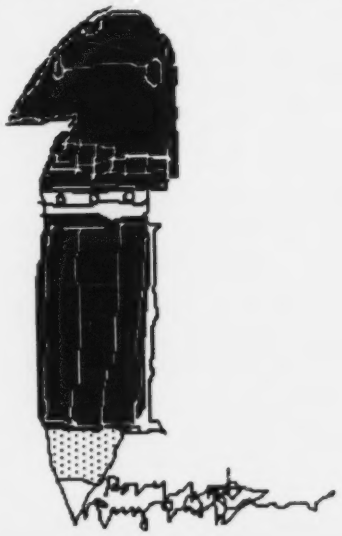
## "...and Procedural knowledge..."

Effective teaching results not from the acquisition of general theories, but from "procedural knowledge," "knowledge how to.... " We need to know that how to teach in order to achieve different learning outcomes in different contexts with different students is one component of teaching effectiveness. In other words, effective teaching that leads to improved student learning does not exist apart from specific and changing contexts.

## "Shared...and judged against criteria..."

We all know how we communicate our research findings, the processes of peer review, of revision, of collegial work. But how might what we know about judging research apply to evaluating teaching? Procedural knowledge is more usually demonstrated through practical writing. The scholarly teacher demonstrates growth in procedural knowledge in the course outlines, lab and course manuals, exam papers, computer-based materials, and reading lists produced and revised for every course. Each of these can be reviewed by colleagues against the standards of known effective teaching processes, using a process designed with help from curriculum experts. The process is straightforward and accessible to any department that wishes to use it.

Classroom research is but one tool for developing better teaching methods. The results are usually reflected in revisions of the teaching materials themselves. When we publish research on our teaching—as is sometimes appropriate—we should recognize that we are taking the role of education scholar, a different, sometimes complementary role to that of scholarly teacher.



## Opposition to Scholarly Teaching

The phrase "non-scholarly research" startles some academics. We are often called on to judge research as more or less scholarly, and can provide criteria for such decisions. Scientific scholarship, for example, must be more than the mere application of new technologies. We do know non-scholarly research when we see it. The competent, confident researcher readily admits this. But do we know scholarly teaching when we see it? And how many of us who seek a higher status for teaching are prepared to invest our energy and take the risks that identifying some teaching as unscholary implies?

Given these risks, there may be more opponents to the concept of scholarly teaching within the ranks of the nominal champions of teaching than amongst those who see themselves as research scholars. The system that supports and orients faculty and graduate students as teachers must look to itself before blaming others for not valuing teaching as scholarly.

The change we are looking for in defining scholary teaching is both conceptual and pragmatic. The ideal of scholarly teaching demands that we question a whole range of beliefs and assumptions. Practical change in how we value teaching in universities and colleges will stem from the changes we make in our everyday lives as faculty in response to this ideal. Such change would necessarily affect our support services for teaching, our programs to orient new faculty, and our training of GTAs.

## Scholarly Teaching Development Centres

Some teaching development centres, perhaps in an effort not to offend colleagues in other disciplines, devote their resources to promulgating teaching tips and survival techniques. Tips and techniques are useful, but we should not pretend that prolonged discussion of these is scholarship. General workshops on "lecturing better" can never substitute for work on the broader questions of how to make large class instruction more

effective, and of when and how to seek alternatives to inappropriate methods of instruction in large classes. Scholarly teaching will not develop against a backdrop of non-scholarly teaching support services.

### New Faculty Orientation

In this final decade of the century, we shall be responding more and more to student needs for independent study and distance learning opportunities. As we produce the materials for such programs, we may either expose the weaknesses in our understanding of instruction; or we may achieve personal growth as educators, and evidence our scholarly teaching in the materials we produce.

We may need to admit that we owe novice faculty more than preparation time and collegial advice. As the novice faculty member works toward tenure, it might be useful to ensure that at least one segment of each course taught be developed as an independent study module with collaborative support from a scholar in teaching support services. The model for such work could be independent study units orienting the new faculty to scholarly teaching.

### GTA Training

Most importantly, as we design training programs in teaching for graduate students, the images that guide the courses should be of scholarly teaching, not of uni-task teaching assistants. Our efforts with our graduate students should not be to socialize them into our mindless acceptance of a system that provides "research opportunities" and "teaching loads." We must not re-imprint the old images of teaching as artisanship—rather than scholarship—informed by opinion rather than knowledge. Instead, we should encourage them to understand the systems they are entering so that they may become effective agents of change within those systems.

### Academic Leadership

There is an urgent need to stop the drain of psychic energy from faculty stressed by conflicting demands and values. We are funded and publicly accountable for our performance as teachers. We are evaluated and rewarded for our prowess as researchers. In the face of reduced resources and increased pressures of many kinds, we might object that this is not the time to try to change the very ground rules for university life. And yet as we develop a new respect for and understanding of the place of teaching in scholarly life, we find that the time for such change is upon us.

As faculty and administrators we can accept the challenge to explore what scholarship in teaching means for ourselves, our new colleagues, our graduate students and our teaching development offices. Commitment to an ideal means action. It is not nurtured by mutual accusations of a lack of good faith. Nor does it mean just a continuation of the old debates and a thoughtless acceptance of old confusions. It is time to stop merely exhorting others to value teaching more highly and time to start accepting the challenge of becoming scholarly teachers.

FURTHER READING: Chris Nash, *Introduction to Scholarly Teaching*, (forthcoming, 1992); Floyd G. Robinson, *et al. Curriculum Development for Effective Instruction*, (Ontario Institute for Studies in Education, Toronto, 1985).

**STUDENTS**

## Effective Teaching for Dyslexics (and Everyone Else)

HARRIET SHERIDAN COULD NOT have guessed when she developed an interest in teaching dyslexic students twenty years ago, that it would quickly lead her to a fuller understanding of the nature of good teaching in general. She began noticing some peculiar, but consistent patterns of misspelling in her students' compositions at Carleton College in Minnesota; "Not the usual 'ence' for 'ance,'" she says. Nor could she have predicted her curosity would lead her to champion the importance of "learning differences" at Brown University (where she now heads the Center for the Advancement of College Teaching) and throughout the Ivy League.

At first Sheridan simply went down to Rochester (home of the Mayo Clinic) to take a course at a reading center run by Paula Goldman, wife of the chief of psychiatry at Mayo. "But then I got more involved. I learned how to be a tutor. I got on the Board of Directors of the Dyslexic Society." Slowly, she says, her thinking evolved until she finally realized that what it took to educate dyslexic students was, in fact, the same sort of responsive, varied, and flexible teaching all students deserve.

"I'd like to drop altogether the phrase 'learning disability,' " she says. "I think it places the onus on the student, and it shouldn't be. Students are there to be taught, and teachers need to go to where [the students] are."

Indeed, Sheridan maintains that students' poor performance often reflects a "teaching disability" rather than a learning disability. "There is a belated recognition, now, that the problem with the undergraduate curriculum is not students' reluctance to study the subjects, but rather, the poor way in which the subjects are taught."

In cooperation with the Academic Skills Center at Dartmouth College, Brown University has produced a half-hour video tape called *Effective Teaching For Dyslexic/All College Students.*

The fundamentals of effective teaching it emphasizes seem so basic one is left wondering what exactly the message is. Essentially, those fundamentals fan outward from an emphasis on organization. In the video, Sheridan stresses the importance of a good syllabus that spells out exactly what readings will be expected, what kind of papers will be required and when they will be due, etc.

In lecturing (still the mainstay of most college teaching), she stresses

- developing a more elaborate system of spelling out in advance what a particular lecture will consist of,
- immediately reviewing the main points of a lecture before the end of the class period, and
- finding different language to explain specialized terminology.

As for discussion groups, Sheridan says, many students, but especially dyslexic students, "think nothing much happens in a discussion group. They have no sense of where to take notes, after all, it's only themselves talking," she says. "For [students] note-taking is reserved for faculty—from whom only truth will flow."

> I'd like to drop altogether the phrase 'learning disability.' I think it places the onus on the student, and it shouldn't be. Students are there to be taught, and teachers need to go to where [the students] are.

But what is the real message here? Sheridan readily admits the familiarity and simplicity of the video's advice. But, she says, since it often isn't followed, it bears repeating. "I don't care what anyone says, there's a lot of 'uninformed teaching' around," she says firmly. After all, she points out, "Nobody ever taught today's faculty to teach."

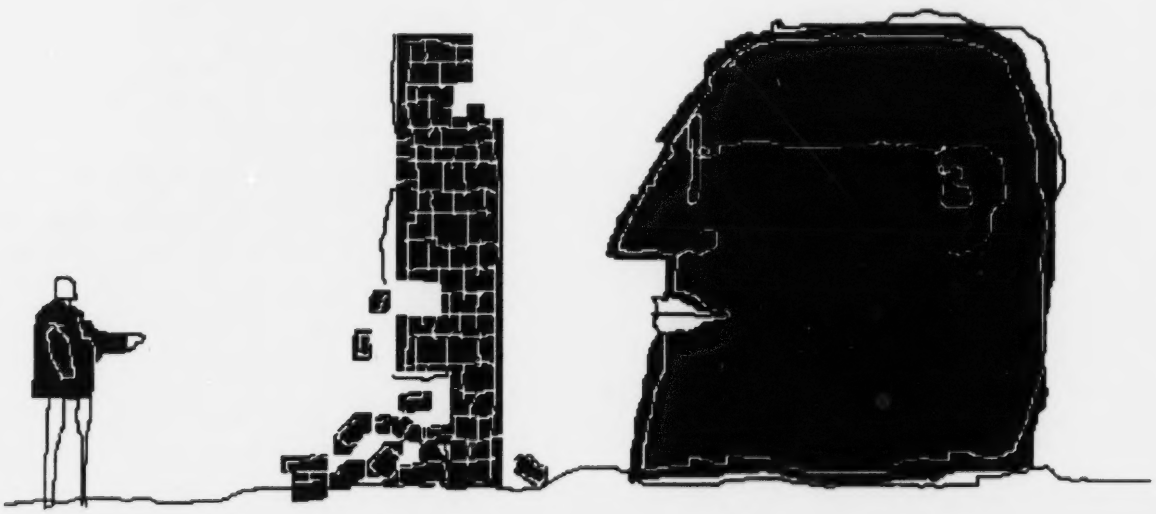
"That's what my Center is about," she digresses: "That's what we're trying to do: help graduate students—the future professorate—become better teachers than their teachers were." It's slow going, but there are encouraging signs that college teaching and graduate assistant training are being given more attention, Sheridan believes. For example, the Third National Conference on the Training and Employment of Graduate Teaching Assistants held at the University of Texas this November featured an address by Maryellen Weimer, editor of *The Teaching Professor*, and drew an even larger turnout than the previous meetings at the University of Washington and at Ohio State University. "We have to take the long range view; we can sit and curse the darkness or do something."

But all of Sheridan's hopes for the advancement of college teaching—both for dyslexics and the general student population—aren't pinned on the future. And the fundamentals of good teaching she emphasizes are only the front door behind which lie a maze of learning differences as exciting and challenging in itself as any academic discipline. Many, probably most, current faculty care a great deal about effective teaching, and in the Brown video a number of them speak eloquently about what they've found behind that door in their own teaching.

For example, one segment features an interview with John Kemeny, professor of mathematics at Dartmouth. Kemeny, a research assistant to Albert Einstein during his graduate student days, co-author of the computer language BASIC, and for eleven years president of Dartmouth, is well-known for his dedication to both undergraduate and graduate instruction. When he speaks of teaching, it's with a disarming humility. He admits, for example, that his own thinking is highly verbal. "But I know that some people are quite visual, and so I must make an extra effort to include examples that will reach them as well." In a soft Hungarian accent, he talks of tuning a lecture so that it will include material at a variety of levels and in a variety of forms. "To make a lecture interesting, but not over the students' heads is a problem, especially for new teachers," he says. "They have trouble remembering how hard something was for them the first time."

Perhaps that is the real message of the tape and of Sheridan herself. The tone and cadence of caring, the "culture of curosity" palpable in Kemeny's voice and Sheridan's and the voices of the other master teachers interviewed convey the weight of a much larger experience and importance than their words do on paper, stripped of what affect rather than argument has to teach.

It seems a bit ironic that focusing on dyslexia—a highly variable condition



common to over 10% of the general population—so easily sidesteps some of the common obstacles to talking about good teaching and seems to evoke from faculty the best wisdom that compassion and experience have to offer.

In part that wisdom addresses in a practical way the daunting prospect of teaching effectively to a wide spectrum of learning styles, learning disabilities, or "learning differences," as Sheridan prefers to call them.

"When you talk about teaching to dyslexic students," says Sheridan, "it sounds as if you're teaching a highly specific, readily identifiable population, but what I'm arguing is that *your entire class* has some form of learning difference. It may not exhibit itself in educational problems such as the visible reversal of letters or numbers, but it's there.

"A student may follow your lectures. His notes may read like a parody of what has been said in class, but he can't translate them into something that's meaningful to him," Sheridan says. And that gets back to her fundamental principle: "Treat your whole class as if it were dyslexic. Learn how to vary your teaching technique to respond to different learning styles—and, in fact, vary it—and you will reach dyslexic students; indeed, all students."

*For additional information on the videotape, contact: Prof. Harriet Sheridan, Center for the Advancement of College Teaching, Box 1867, Brown University, Providence, R.I. 02912. Ph: 401-863-1141*

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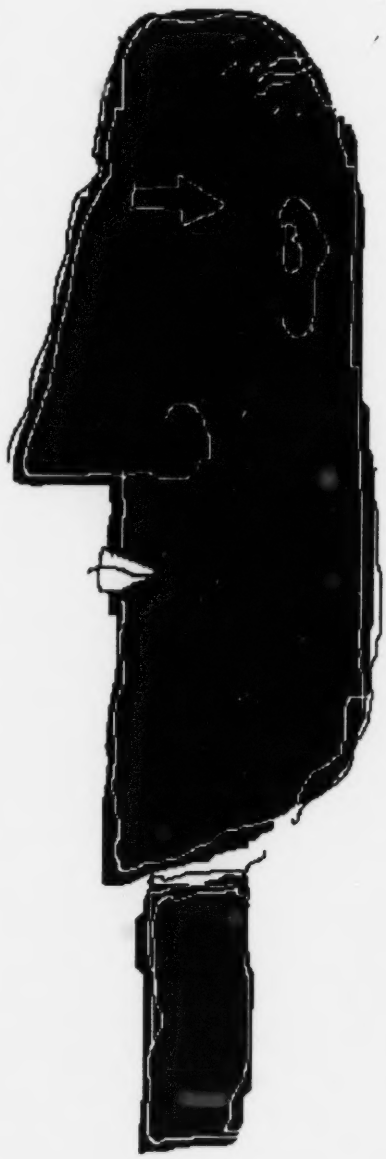
Prof. Sheridan works with mildly dyslexic students. The University of Wisconsin — Oshkosh runs a well-known program for the profoundly dyslexic. Founded by Dr. Robert Nash (himself a dyslexic) in 1979, the program handles approximately 180 students and boasts a 60% - 65% graduation rate. Director Bill Kitz points out that that's better than the graduation rate for the general UW population, and he says, interestingly, it's often the brightest dyslexic students who fail to graduate. Perhaps that's because dyslexia and special strengths in the creative domain (and the impatience that goes with them) often go hand in hand. Y. B. Yeats, for example, is thought to have been dyslexic.

The Oshkosh program also focuses on organization and employs "organizational tutors" to assist dyslexics. But it includes a more intensive focus on drills in basic skills than the Brown and Dartmouth programs.

*For additional information, contact: Bill Kitz, Project Success, University of Wisconsin-Oshkosh, Oshkosh, WI 54901. Ph: 414-424-1033*



**CENTERS**

## Forming a Center for Teachers

WHEN GEORGE WASHINGTON University opened its University Teaching Center last year, it was lending official recognition and support to a focus of interest that had already developed. For several years, GWU had been running two-day orientation and training seminars for its graduate teaching assistants. A group of 25 faculty (with funds from the Ford Foundation) had already been exploring ways to reform introductory curriculum to include materials about U.S. minority women. That project, in turn, quickly led many faculty to realize that most academic disciplines had formed their basic principles of what was important and how it should be taught back at the beginning of the century, and that it was time to revamp them. In short, there was already strong faculty interest in reexamining what good teaching might be and how to foster its development as the Twenty-First Century bears down upon us.

Co-directors Sharon Rogers and Paul Churchill stress that the Center is "faculty driven." The Center does not run programs *for* faculty, they emphasize, nor does it presume to *inform* faculty about matters the Center thinks they ought to know. Instead, the co-directors struggle to hold the Center in a position of support to, rather than definition of good teaching. Rogers (who wears many hats, including assistant professor of sociology, assistant vice president for academic affairs, and university librarian in addition to being co-director of the Center) says: "We've been pretty adamant in not defining what good teaching is. There's been pressure for us to handle teaching awards, for example, but we've left that with the academic departments."

Churchill, a professor of philosophy and former chair of the department, likes to make the point by contrasting what he calls "a morality of aspiration" and "a morality of duty." "You could come up with a set of general principles for good teaching," says Churchill. "Sure, faculty should keep their office hours and so on,

but basically we're dealing at a higher level. Essentially, we're asking faculty 'Do you love this material? What are your goals for your students *vis a vis* this material?' "

Churchill, whose interest in teaching dates back to high school and the year he spent teaching elementary school after graduating from Johns Hopkins, confesses that he doesn't think those elusive principles of good teaching change very much between the elementary grades and college. But, he says, learning them is "a process of self-discovery." He sees GWU's teaching Center as a facilitator in that process. "When I was chair," says Churchill, "I realized 'I've got these faculty for better or worse. Now can I help them reach their goals as teachers.'

"I'm very big on discussion," he continues, "because I think it underscores the students' responsibility for their own learning." But he recognizes that other faculty feel that good teaching for them has a different focal point—the lecture, for example. "At the Center," says Churchill, "our aim is to foster excellence in a variety of modes of teaching, and our primary means of doing that is by keeping a continual dialogue about these various perspectives on good teaching before the faculty."

**Churchill likes to contrast what he calls a "morality of aspiration" with a "morality of duty" in describing the Center's attitude toward defining good teaching**

In addition to the orientation and training seminars for graduate teaching assistants and new faculty, the Center coordinates a Teaching Network of interested faculty, which gathers for monthly brown-bag lunches to discuss teaching issues with their colleagues. Generally, a theme emerges which focuses some of the Center's activities in the coming year.

In addition, the Center organizes a semiannual colloquium on "Innovations in University Education." These colloquia showcase teaching excellence among GWU faculty. The first all-day meeting included a presentation by Professor of Botany Terry Hufford—a presentation that still has people talking. Long before the Center was officially launched, Hufford had become deeply concerned about the differential success rates of white males in his classes as contrasted with women and minority groups. In 1988, Hufford began a series of experiments with his teaching. Among other things, he redesigned lab exercises to encourage small group collaborative activity. As a result of the changes, earned A's rose to 20% of the grades given versus 9% the previous year. Failing grades dropped to only 3% in comparison with a 15% failure rate before the changes. But the best news of all was that racial and gender differences disappeared completely.

Hufford was not alone. Other faculty in other disciplines, including English, law, mathematics, and business administration, had been experimenting and finding significant improvements in the levels of learning taking place in their classes. As a result, the Center has set classroom assessment as the theme for the 1991-92 school year.

Churchill acknowledges the importance of these very visible events, but says the Center does its best work with small groups of faculty. For example, it is bringing together a group of faculty who teach English composition for a small conference on their particular problems and needs. This coming fall, the Center plans a similar meeting for foreign language teachers, especially the ghosts of academe, adjunct faculty. Another small conference will assess the special needs of faculty who teach in the honors program.

Many campuses have opened some form of teaching support or faculty development services over the last two decades. In a 1976 study, 41% of the campuses surveyed by John Centra reported having such services. In a 1985 follow-up survey conducted by Glenn Erickson for the POD Network, some 66% of the respondents claimed their institution's support for these activities was "much or somewhat greater" than it had been three years earlier. The importance of GWU's Center within this general trend lies in the experience it has inherited from older centers.

Among those is the importance of having co-directors who are publishing faculty already respected by their colleagues for their teaching. But co-director Rogers cautions that it's also important to have directors who've had managerial experience within the university. "It's good to have someone who knows the way around in the politics," she says. Very strong support from GWU's president and vice president for academic affairs helps a lot too.

Like other centers around the country, the GWU Center illustrates how a great deal can be done with very little when you have credibility with the faculty and support from the administration. The Center's annual budget is $35,000, not counting small amounts of release time for Rogers and Churchill or the office support that their departments provide. The money helps the Center collect materials on instructional development and—with the aid of a Senior Graduate Teaching Fellow ten hours a week—make them available to faculty. Both Rogers and Churchill have been surprised by how much they could do within this budget.

Again reflecting the accumulated wisdom of such centers, Rogers says GWU's Center is committed to growing slowly in step with faculty interest. Churchill agrees: "I think lasting change is incremental and occurs when faculty have made changes in their own classes and feel the University supports those changes."

Further Reading: R.J. Menges and B.C. Mathis, *Key Resources on Teaching, Learning, Curriculum, and Faculty Development* (Jossey-Bass, 1988) and Glenn Erickson, "A Survey of Faculty Development Practices" in *To Improve the Academy* (POD Network, 1986). For profiles of other centers, see Kathleen M. Quinlan "About Teaching and Learning Centers" in the Oct. 1991 *AAHE Bulletin*.

**RESEARCH WATCH**

# Cognitive Apprenticeship II: Modeling Metacognition

RESEARCH SHOWS THAT college mathematics faculty take three to four times as long to read a calculus problem before beginning to work on it than their students do. Why? What's going on inside their heads? Could that mental activity describe what one researcher calls the "hidden curriculum"—the aspects of knowing a subject that could be, but usually aren't, taught?

Why do students faced with the problem often grab the first idea that comes to them and cling to it—and only it—until time for solving the problem has run out?

Venerable adjectives like "wisdom" and "experience" cloak what's going on inside sage heads and almost suggest that it can only be grasped after years in the school of hard knocks. But the relatively new field of cognitive science (less than thirty years old) has begun to shed important light on the inner workings of this wisdom. The answers from cognitive scientists aren't as terse (or as didactic) as the carpenter's adage: "Measure twice; cut once." But they're more exciting and probably even more useful.

The premier issue of *The National Teaching and Learning Forum* profiled a synoptic research article by Collins, Brown and Newman (1989) called "Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics." Defining faculty as *experts* and students as *novices*, that article breaks expert knowledge into four categories:

- **Domain knowledge**—the basic facts, dates, formulas and concepts of a particular discipline
- **Heuristic strategies**—"tricks of the trade," general approaches to problems that experience has proven valuable, but not infallible
- **Control strategies**—a dynamic of engagement and reflection with the problem, an intuitive sense of knowing which trick of the trade to apply and when to give it up as unproductive
- **Learning strategies**—the sum of the other three when applied to a new field of study or new situation—that is to say, knowledge about how to learn both in general and in specific contexts.

If "expert practice" lies in successfully integrating cognitive and metacognitive practices (i.e. the knowing of the facts with the knowing of how to use them deftly), taking a novice under one's wing in a college classroom becomes largely a matter of externalizing or modeling the processes of thought faculty usually carry out not only internally, but invisibly. How much more would the calculus students learn if, after scratching his head four times longer than his students, the faculty member not only worked the problem on the board, but also thought his way through it out loud, including all the false starts that presented themselves, all the hunches and gut feelings he used in winding his way toward a solution? What if he even risked being unable to solve it? They'd learn a lot.

But how much more would they learn if the classroom experience for the entire semester were a "microcosm of mathematical culture," a place where the "society of mind" thrived on the practice of mathematics?

The cognitive apprenticeship model of Collins, *et al*, draws heavily on Professor Alan Schoenfeld's research on cognition and metacognition in mathematics (*Mathematical Problem Solving*, 1985; *etc.*) Since 1989, Schoenfeld's understanding of metacognition in the classroom has moved a step further. In *Handbook for Research on Mathematics Teaching and Learning* (D. Grouws, ed. Macmillan, 1992), he adds a fifth category—"practices"—which focuses on the importance of creating such cultures among students. Citing a colleague, Schoenfeld writes: "Becoming a good mathematical problem solver—becoming a good thinker in any domain—may be as much a matter of acquiring the habits and dispositions of interpretation and sense-making as of acquiring any particular set of skills, strategies, or knowledge."

Schoenfeld's laboratory is his class in problem solving at the University of California—Berkeley, where he experiments with establishing what he calls "microcosms of selected aspects of mathematical culture." From day one, Schoenfeld immerses his students in a "socialization process" in which they come to understand that the habits and dispositions of good problem solving are as important as any facts or theorems.

"Mathematicians do mathematics because they love it," Schoenfeld explains, "and when you watch them doing mathematics, there's this tremendous feeling of engagement, at being at the end of their own understanding and being in the game, because what you do is stretch your own understanding, and you and the community gain by it." "It's a pleasurable, exploratory enterprise," he exclaims.

But, Schoenfeld continues, follow a mathematician from a morning in his office happily spent doing mathematics into the lecture hall. In that short walk something important is often lost. "What he does is stand up and 'talks' it at them in such a way that they're all passive recipients and have none of the pleasure of engagement that excites *him* about the mathematics," Schoenfeld says.

"There's something wrong in that process," he continues. "If all of these other things are part and parcel of what doing mathematics is—being at the edge of your confidence, but enjoying it; engaging in sense-making processes, rather than simply ingesting someone else's stuff—then those things ought to be part of the learning process for students as well. I mean if they're not, it will be the rare few who do it on their own outside the context of formal instruction and who become the survivors and ultimately the mathematicians."

So how does Schoenfeld keep from getting lost? How does he teach expert behavior based on what he's learned about students' cognitive processes and the metacognitive processes of faculty? How, for example, does he teach students not to fall in love with the first notion that occurs to them about how to solve a problem? "Telling doesn't do very much good," he says. Since telling

his class to avoid that trap doesn't do much good, he lets them see it for themselves. "One of the things I do is show the students videotapes of other students solving problems. I don't do it too frequently, but what happens is they can often be pretty dispassionate analysts of other people going off the deep end, and then recognize that the potential for doing the same resides within them too."

After one or two tapes, you've made your point, Schoenfeld has learned, and other techniques must press the advantage gained.

"Real-time interventions are a hell of a lot more powerful than general advice," he says, and that's where *modeling* and small group activity come in. "The very first day, I tell them it's going to be a main theme of the course, and they will spend somewhere between a third and half of their time the entire semester in small groups working problems, and roughly that amount of time in every class period."

Schoenfeld sees the first day as crucial to the success of the class. There, he establishes his authority as an expert and sets the ground rules for the mathematical culture he hopes to build. Again, he does these things through carefully staged experiences for the most part, rather than through a lot of firm telling. For example, on the first day, he hands out a set of problems which he knows from experience will stump students for at least a half hour, but which they'll likely be able to solve in about five minutes, once he gives them a few simple suggestions.

> "If all of these other things are part and parcel of what doing mathematics is, then those things ought to be part of the learning process for students as well."

"The power of that [experience] is that they get to be convinced that I have something to teach them, which is really important," Schoenfeld explains, "because if I'm going to be putting them through all this strange stuff, they've got to believe it's worth it." Understanding, confronting and altering students' belief systems is an important component in the cognitive apprenticeship model. But powerful experiences involve powerful risks, especially when they invade areas as closely tied to issues of self-esteem and worth as students' belief systems may be. Schoenfeld admits that if he's not very careful, students could end up being put off. "I can remember once when I inadvertently said something that alienated the whole class," Schoenfeld confesses. "It took me a month to get 'em back. There's certainly the potential for things like that." But handled carefully, students understand that they're being given an experience that exemplifies the value of having a variety of heuristic strategies to draw upon in solving problems.

Schoenfeld: "I put them through that experience and say 'Look, this is going to be a problem-solving course. You guys are going to spend a lot of time in class solving problems. We're going to have discussions about them, not only the mathematics, but also about how and why you solved them and what was useful and what wasn't. I'm going to be teaching you a lot of things, including some problem-solving strategies, but you're going to find this the most frustrating course that you've ever taken in your life, because every time you think you understand what's going on, I'm going to change the rules of the game.

"My goal for this course is to teach you to solve problems I haven't taught you how to solve."

And Schoenfeld reinforces that that's an attainable goal by telling his students stories about past classes who, in fact, solved problems he'd put on the final exam for the very reason that he didn't know how to solve them himself.

"That first day is deliberately staged to show them what they're in for," he says. "And that's a critically important part of the course; if that doesn't go right, then the whole course doesn't fly." He must awaken their interest and win their trust and, at the same time, show them, not only the need for engagement and reflection in problem solving, but the excitement of it as well.

But the real excitement of Schoenfeld's research lies in its implications for more effective teaching across the board. "The dimensions of analysis (heuristics, for example) are relevant and appropriate for any problem-solving domain," Schoenfeld believes. And he says, "Virtually any domain where you are trying to do something significant, I can consider a problem-solving domain." To illustrate the point he draws analogies with writing and cites important cognitive research done not only in teaching writing, but in teaching history and literature as well.

"Strategies control beliefs," says Schoenfeld; so that, while there are heuristics or metacognitive dimensions to every discipline, certain problem-solving strategies tend to be specific to each domain. "The strategies that work in mathematics are not the same strategies that work in writing, for example."

However, the patterns or strategies of successful control of the problem-solving process—of higher order thinking—tend to be "domain-independent." The same qualities of balance, of alternatively engaging and reflecting upon problems, that allow one to develop expertise in mathematics are the same qualities that make an effective writer—or historian or chemist—Schoenfeld believes. "What's really needed in my opinion," says Schoenfeld, "is a research program in different domains to identify those [domain-specific metacognitive strategies] at a level where they can be taught. I'm reasonably confident that, at this point, the tough theoretical issues, regarding level of specificity and such, have been worked out, and it's mostly a question of doing the grunt work."

No teacher will be surprised by that: Good teaching, however it's described and whatever insights new research offers, remains hard work.

Further reading: Schoenfeld (ed.) *Cognitive Science and Mathematics Education* (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1987) especially chapters 1,2, and 8. Schoenfeld, "Mathematics, Technology, and Higher Order Thinking" in *Technology in Education: Looking Toward 2020* (Erlbaum, 1988), and Schoenfeld "Learning to think mathematically: Problem solving, metacognition, and sense making in mathematics" in *Handbook for Research on Mathematics Teaching and Learning* (Macmillan, 1992) and D. Albers and G. Alexanderson, eds. *Mathematical People: Profiles and Interviews* (Boston: Birkhäuser, 1985).



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## TA FORUM

# THE LAST DAY

"Students get mired in the day-to-day details. A review on the last day gives you a chance to point out what's really important and how it all fits together—in other words, the Big Picture.

The simplest approach is to go back over the course outline, making comments—why we did this, where that topic leads, what we should have emphasized more at the time, and so on.

> Pick something central to the course; if we wanted to understand just this, what else would we have had to study?

Or you may want to organize the material for them in a different way which sheds new light and makes it look fresh again. Pick something central to the course; if we wanted to understand just this, what else would we have had to study? Why did we study the topics in this particular order? If you had only one hour to give the essence of the course, what would you have taught? Three hours?

Twelve? What's the thing you most regret having omitted? What will the students study in the sequel?

Or in a different vein, you could spend a while with them discussing the recitation or the course itself. In retrospect, what would have made the recitation more interesting? The course easier to learn?

Naturally, if there's a final, the students will want to know anything you can tell them about it. But don't spend the whole period on this. You might try to find out in advance what the lecturer will do the last day and make your recitation complement that in some way.

It's been said that many a course is made by what happens on the last day. Don't just let your recitation stop: give it an ending.

(Reprinted with permission from *The torch or the firehose? A guide to section teaching* by H. Heine, P. Richardson, A. Mattuck, E. Taylor, S. Brown, A. Olsen and C. Russell (Massachusetts Institute of Technology, 1986)

## LETTERS

### Joining the Forum

Is there anyone who doesn't read the "Letters to the Editor" column? Often it's the liveliest part of the publication, just as question and answer periods are often more dynamic than the lectures that precede them.

As *The National Teaching and Learning Forum* takes its second step into the lives of its readers, we invite you to write to the editor. Our space is limited, but we can generally make room for liveliness. However, letters are subject to editing for space and clarity.

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This publication is based on work sponsored wholly or in part by the Office of Educational Research and Improvement, U.S. Department of Education, under contract number R188062011. Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government.

**The National Teaching & Learning Forum**
**The George Washington University**
**ASHE-ERIC Higher Education Reports**
School of Education and Human Development
One Dupont Circle, Suite 630
Washington, D.C. 20036-1183

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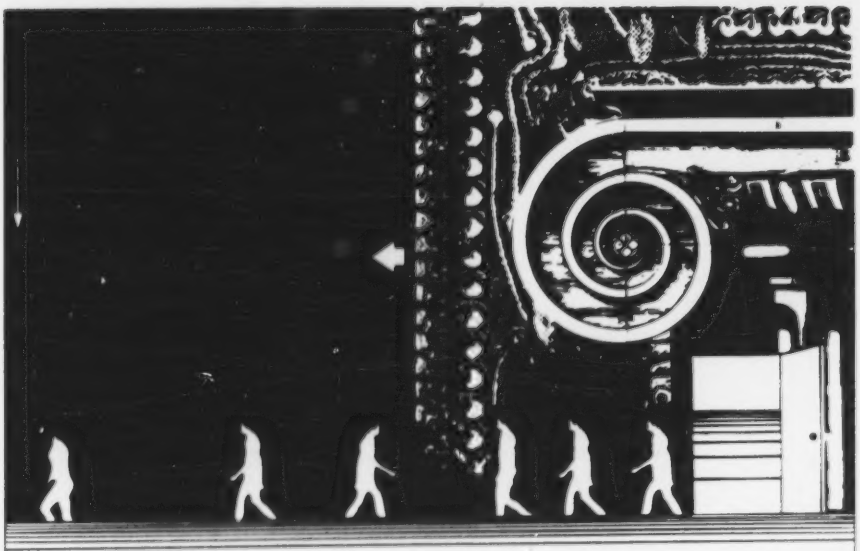
THE NATIONAL TEACHING & LEARNING FORUM

Volume 1 Number 3 1992



# Visual Literacy

THE ANCIENT CHINESE proverb 'A picture is worth 10,000 words' makes sense in the Orient. After all, as a written language, Chinese is made up of thousands of ideograms rather than words. But English speakers have long devalued pictures. (We say "a thousand words.") We may need to change our understanding of pictorial power however, not only to keep up with an increasingly visual world of mass communications, but also to increase the effectiveness of college teaching, especially in the sciences. We know that information is exploding. What we see but don't fully understand is how pictures—including graphs, charts, and diagrams—are surpassing text in their ability to record, transmit, and create new knowledge.

Consider these facts:

• Since 1950, the number of graphic illustrations in standard college biology textbooks has increased by 50%. The number of photographs alone has increased by more than 300%.

• The major college biology texts in use today average more than 1,000 pages in length, but experts say they would be much longer were it not for their heavy reliance on illustrations.

To say that images have come to dominate the presentation of information in science texts, only begins to tell the story. The pictures are there, but a consistent grammar for using and understanding them isn't. Indeed, little research has been done on how students actually use their textbooks, how they interact with them. A review of the ERIC database of more than 600,000 entries run in 1986 by Robert Blystone, professor of biology at Trinity University in San Antonio, found only five entries in response to the combined key-word search COLLEGE BIOLOGY TEXTBOOK. In short, Blystone says, there has been little published research "concerning the design, impact and cognitive efficiency" of college biology texts.

## Picture Power

Blystone's field is microscopy. Visualization, seeing phenomena and depicting data still fill him with a kid's excitement. As we spoke recently on the telephone, he had just finished working out a way to show simultaneously on a computer screen, four digitized movie loops of the formation of the neural tube in chick embryos at different stages of their development . "This is great!" he said "I'll use this in class next week."

Long a lover of images, Blystone first became aware of the problem of visual literacy while reading Advanced Placement Exams for the Educational Testing Service. He noticed he could tell which standard textbook students had studied just by their answers. And it wasn't differences in the written portions of the textbooks their answers reflected, it was differences in the illustrations.

"It had to do with the completeness of the illustration," he recalls. "The illustrations [of skeletal muscles] as presented in some textbooks were accurate, but there wasn't enough [in them] for the student to realize that there was an additional life to the material. They were accurate but incomplete.

"I found that students were more impressed by what was there [in the illustration] than I ever imagined," he confessed. "And what was there gave them an unclear picture, one which, later on, could get them into trouble."

That experience started Blystone on an extensive investigation of college biology texts in particular and visual literacy in general. Since the textbook represents "the most consistently visible window on the biologist's profession," says Blystone, the dominance of illustrations has important implications for what and how students learn about biology.

While a quantitative review of textbook contents proves how important illustrations have become, Blystone finds that the textbook reviewing community, including many faculty, continues to look more closely at a textbook's prose than at its pictures. As one researcher put it, "Rarely are illustrations in text ever considered as important instructional variables." "Many faculty continue to believe that the text carries the burden of information," says Blystone.

As Blystone puts it: "If the biology professorate approached the design of their 'bench' research the way they do the cognitive development of the introductory textbooks, we would still be arguing over 'spontaneous generation.' "

## Reading Illustrations

Students, too, continue to focus on prose, complaining that reading prose places a greater burden on them than the illustrations do. "Students don't think about how much time they spend figuring out what an illustration is telling them," says Blystone. "They have the same disjunction in what they say they value and what they do value in learning, as faculty." In fact, he says, "it may take as long to figure out a half page illustration as it would to read five pages of text." Indeed, Blystone would not have been able to tell which textbook students had used to prepare for the Advanced Placement Exam if subtle, but important differences in the illustrations had not made such a deep impact.

But while publishers employ many scientific measures of readability and reading interest levels to their textbooks's prose, there are no real standards for illustrations, says Blystone. "How does one determine the interpretability of scientific illustration?" he asks.

"We are relying more and more on illustrations to convey the message of the book. You could almost say that these days the written description is the legend to the illustration. But at the same time we really don't fully appreciate the cognitive value of the illustration in terms either of its design or its implementation," he charges.

> "In a period when verbal text complexity is constrained by reading level and interest formulas, the illustration levels can swing like the moods of a manic-depressive."

Not only does the accuracy, readability, and consistency of cognitive design vary between major textbooks, it often varies wildly within the same textbook. Blystone observes: "in a period when verbal text complexity is constrained by reading level and interest formulas, the illustration levels can swing like the moods of a manic-depressive."

Well-thought-out, consistent illustrations programs have advantages over prose, Blystone insists, advantages he fears will be squandered if faculty don't quickly become more conscious of the grammar and impact of visuals. "We're almost creating a visual alphabet," says Blystone, "and different disciplines have different alphabet terminologies. The problem is we don't really realize we're doing this."

Visualizations—which include graphs, diagrams, and charts as well as photographs—present information in a coherent, but non-linear way. This mapping of information invites inquiry in a way that descriptive prose does not. A student may plod through a page of text, but an illustration must be actively queried to be understood.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**The National Teaching & Learning Forum** is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education. One-year individual subscription: $39

Application to mail at second class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:
**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, D.C. 20036-1183



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## Seeing is Learning

In his classroom teaching, Blystone incorporates as much visualization as possible. "Recognizing how important the image has become in instruction, and also realizing that we now have the means to see better than we have had in the past, I'm employing [imaging technology] as rapidly as I can," he says. Instead of having students wrestle with traditional light microscopes and the challenge of preparing slides, he's employing digitized microscope slides stored and displayed on a computer. Instead of having ten slides to work with, the library of computer images gives students hundreds, even thousands.

Freed from acquiring time-consuming skills that don't teach much biology, Blystone's students move directly to learning from images as images want to be learned from—through inquiry. Recalling the excitement of the first lab he organized using computer images entirely, he says: "The students were able to interact with the images—recolor them, change their sequence, look at several images simultaneously, look at electron microscope images, light microscope images, and diagrams simultaneously. They were able to make measurements off the images—something they were never able to do before. The images became far more dynamic for them than in previous lab exercises."

When it was over, students told him, "It's obvious you want us to say this is better, and it is. We understood more. We think our retention will be better, but we've got a problem: There's three times more material here than last week, and that means you're going to test us on three times as much material." Some constants transcend change.

Blystone laughs: "I feel very confident in saying that we can certainly *double* what they comprehend and comprehend efficiently. How much more they can do, I don't know." With knowledge in the sciences increasing exponentially, Blystone says "we've simply got to increase cognitive efficiency, and well-thought-out visuals are a good way to do that."

Working with the grammar of visuals and inquiry-based teaching is a far cry from using slides to illustrate a lecture. For one thing it's harder work. "In an inquiry-based course," says Blystone, "you've got to be willing to allow variation. You've also got to be willing to allow a certain degree of open-endedness to both lecture and lab. That means you've got to be current, able to accept changes that occur in a course, be available more often for student questions. It's just a more dynamic process, and it takes more time and effort."

It also yields unexpected rewards. For example, while taking measurements from the digitized slides and putting the data into a computer spreadsheet, one of Blystone's students noticed a consistent pattern in the location of lacunae in human bone samples. With Blystone's encouragement, he kept working on the slides and discovered that these holes in bone structure fall in straight lines or radiuses out from the central axis or compact bone area. "This was new knowledge," says Blystone. "No one that I know of had observed this before." The student will present his findings at the National Council of Undergraduate Research conference in Minneapolis this March.

If images offer the possibility of making learning more dynamic, more a matter of active inquiry for students, they also come with dangers attached. Blystone admits images and technology have seductive powers, and he sometimes has to fight the impulse to put on an MTV-type show. "You have to keep checking the learning impact versus the entertainment appeal in these things," he says.

And there's the whole question of what constitutes visual literacy—a question that's not waiting to be answered as visual language and usage continue to evolve at a fast pace. "My inclination is to say, 'Yes, there is a new literacy emerging,' but I'm not sure," Blystone says warily. "What I am saying is that people who think that this technology, these visualizations, are not for them, are just going to be literally overwritten.

"As faculty, we need to get very good at understanding what our images are and how people actually learn from those images. It's a wave out there, and we need to learn to ride it."

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# An Anatomy of Boredom

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PEOPLE SEEM PERPLEXED when I TELL them I'm going to talk about boredom. They wonder Will this be a serious lecture on a frivolous subject or a frivolous lecture on a serious subject? Having spoken to a variety of audiences about it, I have come to believe this reaction is further evidence of our cultural uncertainty about the subject.

Seen in one way, boredom is, almost by definition, a banal topic, hardly worthy of investigation. Seen differently, however, boredom appears pandemic in industrialized cultures. In its verb form—bore—it is our culture's most frequent term of judgment, used, for example, with cruel nonchalance by students to dismiss everything from assignments to us, their teachers. Nearly everyone uses it. When asked our reactions to a book or a movie, isn't our first negative comment apt to be "It was boring"?

It is precisely because the term is used so universally, yet so uncritically, that I have become "interested" (the curious, equally problematic opposite of "bored"). In writing here a kind of "minimalist anatomy," I assume the liberty of the parent genre, epitomized by Burton's seventeenth-century *Anatomy of Melancholy*, to approach the subject from a variety of perspectives. In the end, I hope that the relevance to classroom teaching will be clear.

## Dawn of a New Yawn

My first premise is that boredom is largely a by-product of the Industrial Revolution, and that our "high-tech" revolution has magnified the problem. The word "boredom" emerged concurrently with the Industrial Revolution. The *Oxford English Dictionary* claims that "bore" (i.e., to cause *ennui*) arose after 1750 from unknown origins. Noah Webster's 1806 *A Compendious Dictionary of the English Language* has no definition of "bore" (apropos to this study). The 1853 revised edition, *An American Dictionary of the English Language*, however, defines the verb "bore" as "to weary by tedious iteration." Popular use of the verb and noun forms probably did not occur until the later decades of the nineteenth century and the beginning of the twentieth.

I trace some of the word's lexical history to demonstrate that boredom, as an identifiable concept and problem, is distinctively modern. The Industrial Revolution contained at least three elements conducive to it: repetition (or, as Webster put it, iteration), alienation (in the Marxian sense of this word), and leisure time. The literatures of the leading industrial countries have, as one would expect, reflected this modern theme of boredom. Consider such modernist classics as Flaubert's *Madame Bovary*, Kate Chopin's *The Awakening*, James's *The Ambassadors* or Hemingway's *The Sun Also Rises*. Characters in these novels trudge through life with a debilitating sense of boredom.

Perhaps we do not take ourselves so seriously in the 1990s, but the problem of boredom persists. Students in our classrooms lack the studied, romanticized alienation of a modernist hero. Their boredom is less articulated, the MTV version if you will. It is the very lack of articulation that needs to be addressed by teacher and students.

## The Red Herring

"Boredom," as the word is used by students, functions as a red herring, an expression which, in its original sense, meant a smoked herring used to distract dogs from the trail. Unfortunately, uncomfortable analogies between the expression's etymology and teaching apply all too well. As teachers we may find ourselves in the role of hunters (the psychological "Grand Inquisitors") with students as our prey. An accusation of boredom can throw us off the track. It places teachers on the defensive: "If the book I assigned was boring, what am I?" "What am I doing wrong?" we ask as teachers.

Sometimes the subterfuge is transparent. When I used to teach Conrad's *Heart of Darkness* in freshman literature classes, I could anticipate all but a few students calling the novel "boring." This, after all, is less threatening than admitting one doesn't understand it. Ditto for a number of other works I used to attempt with predictable, Sisyphean results.

Other subterfuges have proven more revelatory. Frequently students will say they are bored by a book when they are really threatened by its world view. A few years ago I taught Bobbie Ann Mason's *In Country* to an introductory literature class. I had taught the novel several times before and was confident the class would like it. The novel presents characters and situations that students can easily relate to. Sam, the seventeen-year-old female protagonist, becomes obsessed with learning the story of her father, who was killed "in country" during the Vietnam war. Students in my classes were roughly her age; many of them had fathers or relatives who were in the war. Like Sam, most of them were curious about the war and the *zeitgeist* of the 1960s. I was stunned, therefore, when I walked into that particular class and discovered that the majority of students thought it "boring."

> Raised in a frenzy of fast food, fast music, fast TV and, now, fast wars, how can they shift gears to read a Victorian novel?

My reaction was guilt. The red herring had worked. The next class, however, I was determined to probe and probe, as inexorably as a dentist, until I discovered the real reason for their "boredom." What I found was that they were "put off" by the main character, Sam. Whereas I had seen in Sam an intelligent, spirited, profoundly sympathetic character, they saw a sassy, working-class teenager who was promiscuous and who wasn't even sure she should go to college. In short, she was the embodiment of what they had rejected. The heavens didn't open on that day, but I did savor a minor victory. We had made some contact. The novel that had been boring and, in a sense, dead was now threatening, but very much alive.

## The Malaise

But boredom is more pervasive at the university than these isolated anecdotes would suggest. My second premise about boredom is that it is a malaise which, in our culture particularly, affects late adolescents—that is, the preponderance of university students. I base this premise on a few observations which, I find, evoke immediate nods of

recognition. One of the most telling was the time I was a guest teacher at an eighth grade English class. We were to discuss Sarah Orne Jewett's "The White Heron," a short story I had taught just a week earlier in a university class. The contrasts between the two classes were daunting. I began the eighth grade class as I had begun my university class, by asking the students for their reactions to the story. At the university I managed to coax forth a few grudging reactions. In the eighth grade class *everyone* had an opinion about the story, and the ensuing discussion was lively and intelligent. At the university level I mainly see that kind of energy in returning, older students. In fact, I have had several older students who have been ostracized for their enthusiasms.

These experiences are shared by many. I do not recount them to indulge myself in university student bashing. Instead, I want to admit the obvious and progress from there.

Several theories could account for the acute onset of boredom during late adolescence. In developmental terms, university students are struggling to establish autonomy. To do this, they must erect barriers against over-influence. To be "interested" is to risk losing their autonomy. On a less abstract level, most university students are away from home for the first time. They are often homesick and alienated, twin emotions that "boredom" can easily mask.

These developmental stages are consistent from generation to generation. What is unique to our particular generation of students is the McLuhanesque, mass-media world view. There is a growing generational gap between them and us, based on respective allegiances to mass media and written cultures. Many students are immediately "bored" by any kind of critical analysis, a mode of thought rooted in the written word. They may also be frustrated (read "bored") by the slower pace of much literature. Raised in a frenzy of fast food, fast music, fast TV and, now, fast wars, how can they shift gears to read a Victorian novel?

## The Awakening

This anatomy of boredom has so far focused on the scope and facets of boredom as a problem, particularly in the university setting. But because boredom has a protean nature, it is not completely clear what to do with it once it has been "anatomized." Should boredom be seen as a disease and cured? And, if so, how?

A part of me thinks that our societal flight from boredom is more unhealthy than boredom itself. Americans will seek out any distraction before confronting the self. In *Walden*, Thoreau challenges his readers to "spend one day as deliberately as Nature." Along similar lines, I have always felt that one of the most difficult assignments would be to sit quietly and do nothing for a full hour. If boredom is a kind of disease, then this would be its homeopathic remedy.

Another psychological approach would be to make use of the imagination. Students need to be made aware that boredom is not "out there," but that it is an internal mental state over which they have some control. With this in mind, I have at times proposed an American *koan*: "Where," I ask, "would one go to find boredom?"

More recently, however, I have come to see the other side of the boredom equation. My assumption that students are responsible for their boredom is a half-truth. It occurs to me that some things *really are boring*, to which anyone driving I-80 through Indiana and Ohio can attest. When I wander down a corridor at my school and disinterestedly peer into the classrooms, they do seem cold, cellular, institutional. When I further notice glazed-faced students mechanically keeping up with their note-taking, I realize that many classrooms actually foster boredom.

From the larger perspective, then, the problem of boredom in our culture and in our universities is relational and interdependent. When students are bored, it is *their* responsibility; it is also *our* responsibility as teachers and as a culture. Boredom is a spiritual anesthetic. Our awakening begins with this acknowledgment.

*Reprinted with permission from* Teaching Forum *(Vol. 12, No. 2, May, 1991) a semiannual publication of the University of Wisconsin System's Undergraduate Teaching Improvement Council.*

STUDENTS

# Laying the Groundwork for Class Discussions

*Forest Hansen*
*Professor of Philosophy*
*Lake Forest College*

LIVELY, WELL DIRECTED discussions engage students's attention, nurture their their intellectual curiosity, and develop their analytic ability and creativity. We want good discussions to happen, but often they don't. Our students are mute.

Because the value of classroom participation is being more widely acknowledged, good teachers are devising and sharing innovative and effective discussion and cooperative learning techniques every day. But such formats and procedures often presuppose an established atmosphere of friendliness, wide participation, comfort, and sociability. How does that atmosphere get established other than by fits and starts as teacher and students come to accept and respect each other as the course develops? As with discussion methods and principles themselves, how to establish such preliminaries was omitted from our training as faculty. Left to ourselves, we develop usable approaches over the years only by trial and error. In the hope of helping others, here are some things I've learned in thirty years of teaching.

## Respect for the Learner

One broad principle guides laying the groundwork for active student participation—respect for the learner. This includes the respect conveyed by giving students responsibility for their own learning. At a fundamental level, this entails these subprinciples:

1. treating students as unique individuals,
2. establishing a context that requires student participation, but poses no psychological danger,
3. getting students to attend to each other,
4. posing questions that merit explorative discussion.

One can begin establishing the first two on the first day of class. The others come into play soon after.

## Learn Their Names

Knowing students's names conveys respect for the students as individuals, as persons worthy of being known by name. Alas, no one tells us how to learn students's names efficiently. Yet there are ways to get up to 25 names down pat in a first meeting, and to have as many as 35 faces linked with names by the end of the second class.

As you take roll from the class list, write down students's first or last names on an informal map or ad hoc seating plan of your classroom. A quick glance will enable you to engage Bill or Susan immediately, even as you are getting to know them. Students will likely sit in the same place next time; so you can more rapidly put names to faces in making a seating sketch on that day. You may need to use this device only a few more times, especially if you limit yourself to concentrating on either the first or last names.

## Let Students Know Everyone Will Participate

I used to be tolerant of "back-benchers" who never talk, and sensitive to self-conscious or nervous students. But eventually, I realized I wasn't giving good educational service to either by acceding to their wish to avoid participating in discussion.

Allowed to be silent, back-benchers seal their lips. Never called on, shy students become even more self-conscious. Even when they want to, students who haven't participated early in the year find it harder to do as the term progresses.

Whatever their reasons for not speaking, not calling on such students may confirm their own self-image that what they have to say is not worthy of consideration.

Requiring class participation is not enough. I tell them that on the first day, but I also promise students that they will enjoy participating. How can I make such a promise? Because I show them how I will make it safe for them to speak.

## The Safety Net

Student anxiety is real and must be respected. After all, most students haven't experienced the excitement and challenge of vigorous discussion. To reduce their anxiety, I offer students escape hatches or "dodges" to use when—for whatever reason—they don't want to answer when called upon. These range from *"I don't want to talk just now"* and *"Will you please call on me later?"* to *"Why are you asking me THAT question?"*

Having such discussion choices available reduces tension about talking in class (whatever the cause of that tension). Their availability helps students acknowledge that they are part of the class discussion one way or another. These dodges create a safety net for minimal participation.

I tell students I will always honor their discussion choices and will not embarrass them about using them. And I keep that pledge. The result: No student persists for long in using a "dodge" instead of entering into class discussion.

Giving students such choices provides them with freedom and its concomitant responsibility. Instead of feeling forced to respond, they can freely choose to do so—or to delay doing so. Secure in this freedom, students become more responsible and their participation becomes more thoughtful.

## Getting (Nearly) Everyone Involved on Day One

Telling is never enough. You have to show students you mean what you say. They will have heard you establish the three rules—that everyone will talk, that they can always use a discussion choice, that discussion choices will always be honored—but they will not quite believe you until you show them. Since the bald use of dodges is a novelty for most students, I tell them they need practice to develop skill in using them. I then ask questions that *they are not to answer directly* but to which they should respond with a discussion choice.

One broad principle guides laying the groundwork for active student participation—respect for the learner.

Typically I ask questions that seem to require either a thoughtful or a merely informational answer: *"Betty, what led you to sign up for this course?" "Gary, what do you think philosophy is all about?"* Usually the first or second student tries to formulate an answer and has to be

reminded to use a dodge. At that point students begin to lose their inhibitions and enter into the fun of the exercise. I spend enough time on dodges so that students get a feel for using discussion choices and a sense of their legitimacy.

The exercise is fun, an ice-breaker. But it does more than break tension. It builds trust. It primes students for a class where they know their voices will be heard, where they will be challenged to think aloud, and where they will not

The underlying message is that students's thoughts and utterances are worthy of attention, of being explored, challenged, developed.

be embarrassed by their teacher. With a ground of trust laid, with students beginning to feel both their freedom and their responsibility in the class, an instructor can select any discussion format: Full group discussions, working in pairs or threesomes, debates or panel discussions, role playing, or any other procedure designed to engage students in active learning.

## Three Guidelines for Maintaining Trust

To build on the covenant outlined in the three rules for discussion, I've found three simple guidelines of great value. Each reflects the basic principle of respect for the learner in one way or another.

• **Start each question with a student's name.** Beginning a question with a student's name grabs that person's attention. It prepares him or her to attend to the query, and puts the student in a participatory mode. It saves time as well, since it generally saves having to repeat the question. More importantly, it promotes trust and comfort. The hidden message in this simple rhetorical habit is that students won't be caught off guard. They come to know they'll always be alerted to questions coming their way.

• **Take yourself out of the center.** In our initial struggles to bring more student voices into discussion, nearly all of us make ourselves the hub. Our questions to students and their comments to us exchange the weight of discussion as though they were spokes in a wheel. But this is discussion in the narrowest sense. Asking one student to comment on what another has said offers a way out of the center:

*"Sarah, what might you add to Tami's list?"*

*"Peter, what do you think of Eliza's analysis?"*

This technique can be extended considerably and can give shape to the discussion:

*"Jenny, your remember that ten minutes ago Sam argued that . . .. Does that argument still seem a strong one, given what Liz just said?"*

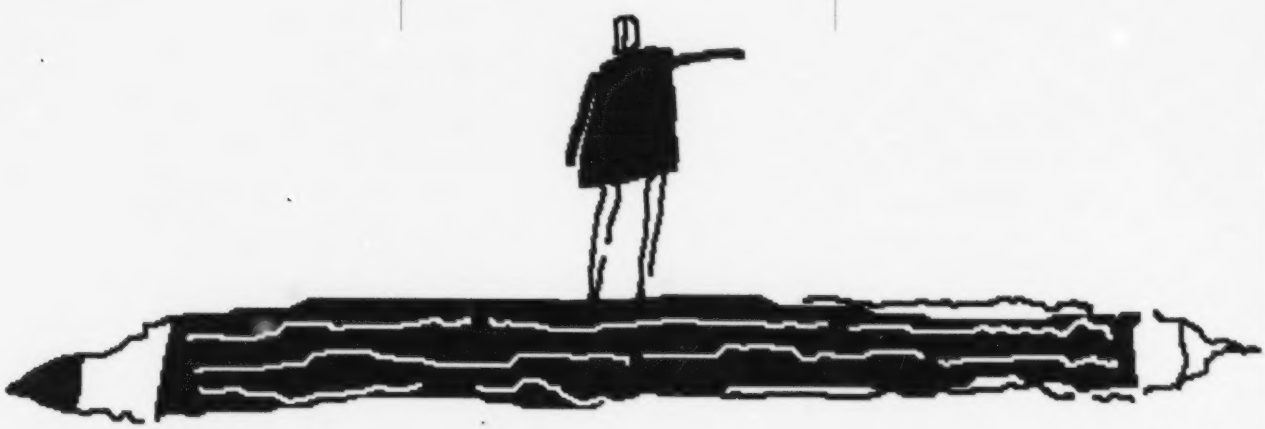
Having the spokes talk to each other makes for a more genuine rather than contrived discussion. Students quickly learn they must attend to what their classmates are saying. And they learn that they must make themselves clear and persuasive to their peers.

Here again, the underlying message—which requires continual reinforcement—is that students's thoughts and utterances are worthy of attention, of being explored, challenged, developed.

• **Ask genuine questions.** Ideally, discussion questions should be ones for which the instructor has no definite answer. Otherwise students are just being set up. That doesn't mean that instructors have not thought about the question, nor that they may not have a commitment to one answer rather than another. But it does mean they recognize multiple respectable answers—and a place for making the best argument possible for any plausible answer. In this setting, teachers may learn something new instead of just going over old material with a new audience.

Devising and ordering questions that ask students to explain, argue, interpret, define, illustrate, paraphrase, amplify, and clarify requires considerable preparation if one hopes for a rich exploration in class. And even after that preparation, one must be willing to shift ground, to follow the promise of new leads in what students say.

There are doubtless other subprinciples and certainly other techniques for encouraging active student participation in classes. Almost any technique will work when devised in a spirit of respect for learners—respect for their individuality, their need for support and encouragement, the place of their peers in their education, and the importance of their own sense of responsibility for their learning. Respect removes many fears, and fostering freedom from fear enhances learning as much as anything else a teacher can do.



# Cooperative Learning: Theory and Practice

*Compiled by Karl Smith, Associate Professor, Civil Engineering, University of Minnesota and Judi Conrad, Associate Director, ERIC Clearinghouse on Higher Education*

Enthusiasm for the application of cooperative and collaborative teaching methods in higher education has been building for several years. In a few more years we may look back on the 1990s as the decade where they really took hold, and came into their own. Lots of research has been done on these techniques, and this issue's ERIC Tracks profiles the variety of studies published to date.

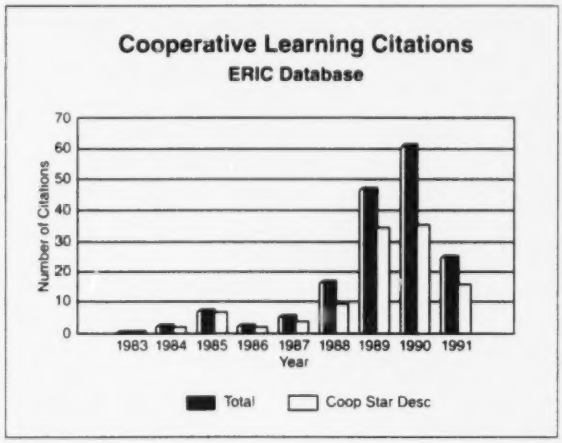
In the late spring, the National Center on Postsecondary Teaching, Learning, and Assessment will co-sponsor publication of a sourcebook aimed at spotlighting exemplary campuses where collaborative learning has caught hold and at promoting a national conversation on the educational benefits of these methods. The Center also has plans to sponsor a major "What Works" conference on collaborative and cooperative learning, probably next year.

Everyone talks about the crisis in education: Wait until they hear about the exciting reforms that have already begun.

A recent ERIC search of "Cooperative Learning in Higher Education" produced 171 citations. The figure below shows the distribution of these citations between 1983 and 1991. The graph shows both the total number of citations in each year and the number of citations in which "cooperation" appeared as a starred descriptor. One can see immediately that interest and research efforts in cooperative learning in colleges and universities are growing at an incredible rate.

## Cooperative Learning in the Disciplines

Research studies and case examples on the use of cooperative learning strategies are available in many disciplines, including biology, chemistry, engineering, dentistry, law, music, statistics, and many more. For example:




**"Increasing Academic Performance in a Introductory Biology Course."** Hufford, Terry L. *BioScience*, v41 n2 p107-08 Feb 1991. ERIC Document Number: DJ421979.

A traditional introductory biology course was modified to stress the use of cooperative learning groups. Students's achievement and attitudes improved.

**"An Application of the Patient-Oriented Problem-Solving (POPS) System."** Chiodo, Gary T.; (*et al.*). *Journal of Dental Education*, v55 n5 p327-31 May 1991. ERIC Document Number: EJ427353.

The Patient-Oriented Problem-Solving System is a cooperative learning model. It was implemented in a second year immunology course to correlate basic and clinical sciences information about Acquired Immune Deficiency Syndrome. Student enthusiasm and learning were substantial.

## Cooperative Learning and Computers

Coupling cooperative learning and computers is becoming increasingly popular and the consensus is that individual student learning can be increased through cooperative learning and the appropriate use of computers.

**"Knowledge Hypermaps and Cooperative Learning."** Reynolds, Sharon B.; Dansereau, Donald F. *Computers in Education*, v16 n2 p167-73 1991. ERIC Document Number: EJ423425.

Discussion of knowledge maps focuses on a study at Texas Christian University that was conducted to determine the effects of scripted cooperation in a hypermap environment.

(Note: The reduced number of citations in 1991 probably reflects the lag-time between the acquisition of documents and when they become searchable.)

**"Radical Changes in Class Discussions Using Networked Computers."** Bump, Jerome. *Computers in the Humanities*, v24 n1-2 p49-65 Feb-Apr 1991. ERIC Document Number: EJ417433.

Freshman and senior English literature students and graduate humanities students tested a synchronous local area computer network's applicability for classroom discussion and collaborative exams and essays. Student responses to 50-70 research questions show advantages of computer-assisted classroom discussion far outweigh disadvantages. Advantages include greater student participation and minority liberation.

## Cooperative Learning and Writing

Approximately one-quarter of the citations in the database involve the development of written and oral communication skills. Professors in these areas have been actively studying and using cooperative learning strategies for a long time.

**"Group vs. Individual Completion of a Cloze Passage."** Jacobson, Jeanne M. *Journal of Reading*, v33 n4 p244-50 Jan 1990. ERIC Document Number: EJ403633.

Study investigated the effect of cooperative completion of a cloze passage with subjects who are relatively sophisticated in both language use and group interaction strategies. Cooperative learning groups produced more responses than individuals, gave fewer idiosyncratic or illogical responses, attended to larger chunks of text, and used every available cue.

**"Cooperative Writing: Direct Effects and Transfer."** O'Donnell, Angela M. (*et al.*) *Written Communication*, v2 n3 p307-15 Jul 1985. ERIC Document Number: EJ319757.

Experimental study compared the performance of students who cooperated on an instruction writing task with that of students who worked alone. Authors conclude that cooperating dyads can improve the communicative quality of their instruction writing.

## Cooperative Learning Experimental Research

Approximately one-fifth of the citations involved experimental research, of which one-half were conducted by Donald F. Dansereau's group at Texas Christian University. For example:

**"The Role of Individual Differences in the Cooperative Learning of Technical Material."** Hall, Richard H., *et al. Journal of Educational Psychology*, v80 n2 p172-78 Jun 1988. ERIC Document Number: EJ388081.

Individual differences in the recall of procedural and structural/functional information was investigated in situations in which students studied in cooperative dyads or alone. Studying in cooperative dyads proved more effective than studying alone in this study of 303 undergraduates.

**"Cooperative Learning: Impact of Acquisition of Knowledge and Skills. Technical Report 586."** Dansereau, Donald F. Sep 1983 49p. ERIC Document Number: ED243088.

In three experiments investigating (1) the features of cooperative learning in pairs that lead to improved mastery and retention of information and transfer of learning strategies to individual situations and (2) the individual characteristics that contribute to cooperative learning outcomes, 126 college students studied excerpts from expository texts and were tested on retention of main ideas and details. Students worked either in pairs or individually, with or without experimenter–provided learning strategies. In the cooperative learning situations, one partner summarized the text read while the other either simply listened or provided elaborative and corrective feedback. Recaller/listener roles were either fixed or alternated. Effects of cooperative learning strategies on individual learning tasks were also assessed in a transfer task and eight measures of cognitive style and ability were administered. Findings showed that (1) cooperative learning was consistently more effective than

## Change-Your-Mind Debate

This technique involves posing an either-or question to a small group of students. For example in Henry James's *Portrait of a Lady*, should Isabel return to Italy and her unhappy marriage to the shallow Osmond and his frail daughter (by his mistress Madame Merle, Isabel's supposed friend) as James has her do, or leave him and return to America and a life with the suitor she finally admits she loves, Casper Goodwood?

Or—to pick a more volatile question—should scientific data on the human body's response to freezing temperatures derived from Nazi experiments on concentration camp prisoners in World War II be used in medical research today?

The instructor asks students who clearly feel one way or the other to sit on opposite sides of the classroom and debate the issue back and forth. Undecided students form a third group that also may participate by asking questions or challenging assertions.

The aim here is not to win a debate, but to explore a question vigorously. Students should feel free to change their minds as the debate progresses. When they do, they show the change by moving to the appropriate section of the room. The seating pattern thus reflects the tide of thinking at any given moment. The undecided often provide an important, objective point of view that helps the exercise stay on target.

The instructor's principle role lies in posing good questions and in intervening if the process stalls out at some point.

Besides encouraging active participation by all members of the class, the exercise helps students sharpen their thinking without locking them into positions they may not feel comfortable with as the debate progresses. It also encourages students to manage their own discussions and to support one another.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## Peer Group Teaching

Shifting toward cooperative learning within a large class begins with the division of the class into groups of from three to five students. They should not be randomly or electively organized; instead, the instructor should assign the groups making sure that each contains some less-knowledgeable students as well as others who are well-informed.

With groups formed, the instructor poses to each an issue, problem or aspect of a topic drawn from lecture or discussion. For example, in a literature course, each group might focus on the motivations of a different character in a novel or play. Alternatively, all the groups might be asked to identify the major themes of a work.

Later on, the groups present their thinking to the class as a whole for discussion.

In this process, the instructor moves from group to group helping with difficult points and assisting the discussion as needed. Often natural leadership emerges within a group as students teach each other, and usually each group decides upon a recorder who later gives a report of the group's discussion to the class.

This technique encourages student-to-student interaction and active participation. As a consequence a greater diversity of ideas emerges and students become better acquainted with one another. This, too, enhances participation in discussion.

individual learning, (2) recallers consistently learned more than listeners, (3) the summary recall and feedback strategy transferred positively from cooperative to individual learning situations, and (4) field independent and highly verbal partners facilitated the learning of field dependent and moderate verbal ability partners, with no adverse consequences to themselves.

## Cooperative Learning and Teacher Preparation

Increasing attention is being given to helping prospective teachers learn about cooperative learning.

**"Cooperative Learning as a Teaching Strategy in Elementary and Secondary Teacher Education Courses."** Prescott, Susan; Wolff, Diana E. *Teacher Education Quarterly*, v17 n2 p41-58 Spr 1990. ERIC Document Number: EJ419260.

Data are presented from a study of cooperative learning as a teaching strategy in teacher education courses. Two university methods courses were restructured to incorporate learning teams and interactive practice activities. Results indicated that students who had difficulty mastering specific content performed better with cooperative learning practice.

**"Cooperative Learning in Special Education Teacher Preparation Courses."** Reynolds, Catharine; Salend, Spencer J. *Teacher Education and Special Education*, v12 n3 p91-95 Sum 1989. ERIC Document Number: EJ399121.

Guidelines are presented for designing and incorporating cooperative group learning strategies into teacher education preparation courses. Guidelines include determining appropriate content, selecting a cooperative format, forming cooperative groups, teaching cooperative skills, providing feedback, and evaluating learning. Student satisfaction results of a pilot project in a graduate course are presented.

## Cooperative Learning and Structured Controversy

One of the most exciting applications of cooperative learning involves deliberately structuring argument in the classroom. Structured controversy discussion has elements of debate, but unlike debate, there is positive interdependence—the groups have a common goal of understanding the best arguments on all sides of the issue.

**"Small-Group Discussion in Philosophy 101."** Glidden, Jock; Kurfuss, Joanne Gainen. *College Teaching*, v38 n1 p3-8 Win 1990. ERIC Document Number: EJ404099.

In a method called "cooperative controversy," students team up to study controversial subjects, then synthesize their findings. In a philosophy course, small-groups work on a specific philosophical problem. Cooperative group work was equally or more effective in all five cases studied.

In 1991, the ERIC Clearinghouse on Higher Education published *Cooperative Learning: Improving College Faculty Instructional Productivity*. In it the authors David W. Johnson, Roger T. Johnson and Karl A. Smith summarize the research on cooperative learning; explain the basis for its success in promoting students's learning; describe many techniques for its successful use; and discuss in depth the cooperative lecture, base groups, and cooperation among faculty. The monograph is available for $17.00 postpaid from ASHE/ERIC, One Dupont Circle, Suite 630, Washington, DC 20036-1183.

In the past, cooperative learning techniques were accepted as an intrinsic part of early childhood education, but, generally, they were not systematically incorporated into the later elementary and secondary years; today, however, cooperative learning finds considerable support among secondary education practitioners, providing higher education with many models adaptable to the post-secondary arena. *Cooperative Learning and the Collaborative School* edited by Ronald S. Brandt (1991), an excellent collection of readings published by the Association for Supervision and Curriculum Development, gives numerous examples of such models.

Our review of the literature leaves us with three major conclusions:

1. Cooperative learning is equally or more effective than lecture in helping students master conceptual material and helps them develop skills for working with others.
2. Cooperative learning is being implemented in a wide range of courses and programs—including health sciences, law, engineering, math and science, writing, communication, study skills, professional development, and teacher preparation.
3. There are numerous ways to use cooperative learning—cooperative lecture, base groups, formal task groups, structured controversy discussion groups, and jigsaw groups.

# Collaborative Learning: A New Sourcebook

Collaborative learning and cooperative learning spring from different traditions, according to Vincent Tinto of Syracuse University. Cooperative learning, he says, comes from the K–12 world where individual teachers "reconstruct how classrooms are run."

Collaborative learning on the other hand comes out of an epistemological tradition—"a tradition that says knowledge is constructed not only by having students work together, but also by encouraging syntheses from different academic disciplines which are not possible in separate courses." "Thus, in the collaborative movement you find faculty working together on courses as well as students working together in them," says Tinto.

Advocates of both teaching strategies believe that while students may not learn more content through these approaches, they learn skills that traditionally organized classes don't teach—skills that both enable and encourage students to become active, independent learners who are likely to continue and graduate. But such skills don't show up on content-oriented tests.

That's where Tinto and the National Center on Postsecondary Teaching, Learning, and Assessment come in. One of the Center's longitudinal studies tracks the effectiveness of exemplary practices. "And we're a bit hard-nosed about what's 'exemplary,' " says Tinto. "We're only looking at practices that have a good track record."

"Our's isn't just a center for academic research," he says. "The role of research is to illuminate, document, provide useful insights that can be applied in the real world." Instead of studying a private college where these techniques may have been part of the campus culture for years, Tinto picked Seattle Central Community College—"an institution where it can be said across the nation, 'Well, hell, if they can do it there, we can do it here,'" he says.

For Tinto the jury is still out on the long-range effectiveness of collaborative learning. Many of the studies suggesting its efficacy sampled a single month or semester. The Center's study will last a year and a half. "We have no sense that these strategies are the salvation of higher education," says Tinto, "but there is enough evidence to suggest that they hold great promise."

Late this spring, the Center (together with The Washington Center for Improving the Quality of Undergraduate Education) will publish *A Sourcebook on Collaborative Learning in Higher Education*. The book, like the Center's on-going research, will give collaborative learning more national visibility. Chapters written by prac-titioners with long histories in the field will answer basic questions such as "What is collaborative learning?" "What are its effects?" "How do you implement it?" "Where is it being done?" and "Who should I talk to if I want to try it?"

For more information on the sourcebook, contact: The National Center on Postsecondary Teaching , Learning, and Assessment, Penn State University, 403 South Allen Street, Suite 104, University Park, PA 16801-5202. Phone: (814) 865-5917.

## Who's Who in Collaborative Learning

Readers interested in talking first-hand with experienced practitioners of collaborative and cooperative learning will want to know the following people even before the new sourcebook appears:

Barbara Leigh Smith and Jean MacGregor head the Washington Center for Improving the Quality of Undergraduate Education located at Evergreen State College in Olympia, Washington. They have written the first chapter in the new sourcebook. Reach them at (202) 866-6000 ext. 6863.

You are going to be hearing more and more about "learning communities" in connection with these teaching and learning strategies. A leading exponent of the learning community concept is Roberta Matthews, LaGuardia Community College, 31-10 Thomson Avenue, Long Island City, New York 11101. Phone: (718) 482-5405.

The collaborative and cooperative learning movements are merging, and no one can say which term will dominate. James Cooper of California State University–Domingues Hills edits a useful newsletter called *Cooperative Learning and College Teaching*. To get on the mailing list or to receive information on the first national conference on cooperative learning (scheduled for October, 1992), write James Cooper, HFA-B316, CSU-Domingues Hills, 1000 E. Victoria Street, Carson, CA 90747. Phone: (310) 516-3810.

Other leaders in the cooperative learning movement include James Eison, director of the Center for Teaching Enhancement at the University of South Florida and Roger Johnson and David Johnson of the Cooperative Learning Center at the University of Minnesota. The center has a free, easy-to-access, computer bulletin board listing its newsletter and recent writings on cooperative learning. Connect with the bulletin board at (800) 457-7227.

Karl Smith, co-author of the ERIC Tracks column in this issue of *The National Teaching and Learning Forum* and of the ASHE-ERIC Report on cooperative learning, has used cooperative learning techniques in his civil engineering courses at the University of Minnesota for over eight years. Contact him via E-Mail at ksmith@umnacvx.bitnet, CompuServe 71750,663 or by old-fashioned phone at (612) 625-0305.

**TA FORUM**

# One of My Favorite Teaching Techniques

*De Gallow*
*Associate Director*
*Instructional Development Services*
*University of California–Irvine*

A FEW YEARS AGO I HIT UPON a simple technique that has since reaped tremendous benefits for both my students and me. In the process, both they and I have developed a healthier respect for their ability to ask good questions. The technique works across disciplines, for both small and large classes, and all it requires is 3x5 index cards.

Occasionally, even in classes where the rapport between students and teacher is quite good, students suddenly turn silent. At times such as these it is difficult to know what that silence means without assistance from the students. When I'm not getting feedback from the class, I reserve the last five minutes of the classes for a short writing exercise.

Using no more than five index cards, I ask the students to write three to five different open-ended questions. (Their name on the cards will produce check-mark credit for completing the assignment.) Since the cards are small, their questions will be brief.

I take home the cards and briefly scan them, putting them in stacks by topic. For some reason the questions tend to fall into three categories, with an occasional forth "wild card" category–well-written, intuitive questions that don't fit well anywhere else. The categories give me a window on my teaching—they often reveal where I am making my points well and where I'm not. I now have a sense of what bears repeating and what can be glossed over quickly during the next class.

This doesn't exhaust the use of the cards, however. Either on a handout or on the board I write out three to five of the best-written and most representative of the students's questions. Though I don't identify the writers, this is a public validator for those accustomed only to seeing the professor's or some other expert's ideas on the boards. Explaining that all of the students's questions tended to be in the same areas also normalizes their experience–they're not the only ones with those concerns.

There are many other activities that can evolve from this simple technique. You can assign the three to five questions as homework or you can put students in several groups, give each group one of the questions and allow them ten minutes to come up with a response. (I emphasize "response" over "answer" as this gives the students encouragement to take risks and to be creative.) After ten minutes, I ask each group to appoint a spokesperson who will then report the group's responses to the class. I get much richer responses this way when the activity is collaborative than I do when I make it an individual homework assignment. The students are also more invested in the questions as they are their classmates's concerns, not necessarily mine.

The best outcome of the technique is that students have their peers to model good, critical questions for them. They see that they, too, can ask probing questions. They even become a little competitive with one another, hoping that I'll choose their question as a prototype. It's a simple writing exercise that has many positive consequences.

And the technique actually encourages more discussion as opposed to quelling it. Students see that I'm interested in their concerns, that their peers have similar questions, and that good things result from having asked. In other word, it's safe not to know everything.

*Reprinted with permission from UCIDeaS (Vol. 6, No. 1, December 1991).*

This publication is based on work sponsored wholly or in part by the Office of Educational Research and Improvement, U.S. Department of Education, under contract number RI88062401. Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government.

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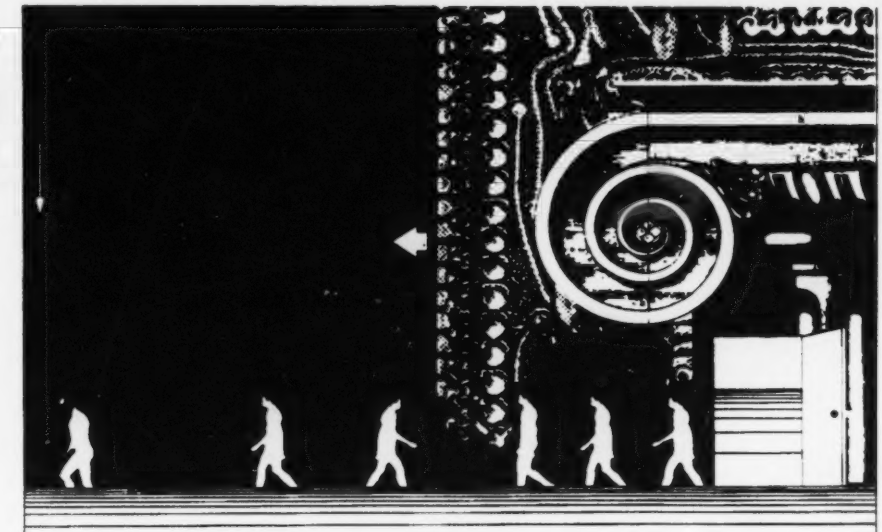
HE 025844

Volume 1 Number 4 1992



# Sitting In On AAHE's Forum On Exemplary Teaching

FOUR YEARS AGO THE American Association of Higher Education invited the chief academic officer on every campus in the country to nominate a colleague to attend a forum on exemplary teaching as part of its annual convention. "We were quite a rebellious group," remembers Diane Gillespie. "We were unclear as to exactly why we had been sent, and we were skeptical of the whole process." Jaime Escalante, the now-famous high school calculus teacher whose work with minority students from East Los Angeles became the basis for the movie "Stand And Deliver," gave the keynote address that year. "A lot of us were unconventional folks, who tried to embody the ideals associated with Escalante," Gillespie recalls. "We were ready to be wild."

The plan had been for the group to share teaching experiences and then extract some principles that described their teaching. The story-telling part went fine. The generalizing went nowhere. Pat Hutchings, director of AAHE's Teaching Initiative, remembers the evaluations of that first forum: "Half thought it was the most meaningful experience of their lives; the other half said they didn't learn a thing." But while it didn't go quite as planned, no one thought the forum was a failure, and AAHE has continued sending out fresh invitations to nominate new members and inviting old members back each year.

## A Constant Agenda

"The agenda has been pretty constant: to create a space for a conversation about teaching," says Pat Hutchings, "a particular, situated, contextual conversation." The number of participants has stayed around 150, but the group has changed character somewhat. "The nomination letter doesn't ask for the 'best' teacher on campus," says Hutchings. "It asks for teachers who aspire to be teachers of teachers — those who are interested in doing something for and in teaching on their campus." The result, says Hutchings, has been a subtle shift away from the personal toward the strategic in many discussions. That shift fitted well with this year's forum which gathered in Chicago in early April. This forum included presentations on Ernest Boyer's *Scholarship Reconsidered* and specifically asked participants to think about how they might help stimulate a reconsideration of teaching on their home campuses.

Discussions began on Saturday afternoon and continued at special lunches and dinners throughout the conference. In contrast with past years, the debate about whether teaching could be taught — whether teachers were born or made — and

about whether teaching could only be discussed within the context of a specific academic discipline did not dominate the conversation. Indeed, it came up very seldom in the groups *The National Teaching and Learning Forum* sat in on. That's not to imply some common agreement had been found. The conversation had simply moved on to other matters.

## The Common Thread

The common thread twisting and turning through this year's discussions was students. Who are they? Where are they? What do they notice and value? What are their deeper expectations? And how can faculty get under the iceberg of nonchalance students often present to find out? In a strange way the distance between faculty and students seemed to have lessened in these discussions, as though judgment and blame were tired and compassion and curiosity had stepped in to carry on.

On Saturday discussion in Group 16 began with faculty voicing concerns over students's (sometimes) myopic interest in jobs and careers. Frank Brady and his colleague Robert Forman from St. John's University had been on opposite ends of the discussion on their campus. Brady teaches a one-credit course set up specifically to address students's practical concern with jobs. The course, which covers resume writing and other practical skills, focuses on the real-world dilemma of leveraging a college degree into a job. Forman opposed the course, upholding what he described as "the snooty point of view," saying that such courses were not what college was about.

This exchange was in some ways typical. Discussions about students throughout the conference often began in a tone of complaint and frustration that students did not seem to want to learn what faculty wanted to teach. Usually, though, they moved on to a more compassionate, if equally inconclusive consideration of what students seem to want. As one faculty member put it during a session led by Parker Palmer on "The Courage to Teach" (see *The National Teaching and Learning Forum*, Vol.1, No. 2), "When we meet to talk about teaching on my campus, we often lose our focus and end up talking about 'them.' I've found it's usually best to let that go because eventually, after we get the bitching off our chests, someone says, 'Well, all students aren't that way; I had an experience the other day . . .' " Generalizing about students, their lack of preparation, their "do-it-to-me" passivity about learning and what one group described as their "dogmatic relativism" about the way of the world and its issues began discussions, but it did not monopolize them.

Usually discussion shifted from complaint to amazement. Susan Hill teaches English composition at Florida Community College at Jacksonville. Her son is a freshman at the University of Florida, where Hill went to school. She asks him about his courses, his teachers. "But he says *nothing* about content," Hill exclaimed. "He talks about how the teacher treats him, whether he keeps office hours or not — his personality." Esther Kingston-Mann of the University of Massachusetts — Boston reported the same behavior in her students: "I ask them to write an essay about the last history course they took, and I get these amazing papers. They talk about what the teacher wore and all sorts of things, but nothing about what we think of as the content of a course."

Faculty come to the classroom prepared to teach one kind of class and a certain range of students. Instead, they meet a different class. The clash of expectations widens the gap between faculty and students. The forum offered no ready solutions to the dilemma, but in the discussions, there did seem to be a general softening of response, a willingness to meet the students where they are. William Sanders, who teaches at the U.S. Coast Guard Academy, was typical. "When I started teaching I was focused on information," he confessed, "but I've moved more toward what I call 'frameworks' or 'points of view' these days. Ways of seeing and thinking, you might say." Sanders was also typical in having developed a greater appreciation of the importance of cultural diversity in his classes. "I was teaching a course last year and none of my examples made sense. Most of my students were not white, middle-class Americans; so I had to stop and change all the examples I was using."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**The National Teaching & Learning Forum**
is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education.
One-year individual subscription: $39

Application to mail at second class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:
**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, D.C. 20036-1183



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## 'All Lost Together' —Barb's Story

DIANE GILLESPIE, who teaches at the University of Nebraska-Omaha, is a senior member of the AAHE Forum on Exemplary Teaching, having participated since it began in 1989. What narratives about teaching reveal (and mask) has become a special interest of hers. Gillespie shares the following story from a participant in last year's meeting.

"An African-American new to our honors program sought me out in my office because she was feeling ill at ease in her first honors class. I was her advisor, and she wanted to drop the class. She felt uncertain and timid and was sure all the other students knew what was happening in the class. I thought hard for a moment, then looked at her directly and said, with all the matter-of-factness I could muster, 'Sheila, the other students are faking it ... just faking it. Walk up to some before or after class and ask them about the course. Then come back if you still feel lost.'

Two days later Sheila passed me in the hall on her way to class and with a big smile on her face said, 'Hey, you were right! Now we're all lost together!' "

Gillespie observes: "What's really difficult to unearth is Barb's thinking process on the spot there in her office with the student. How did she know to focus on Sheila's isolation from other students and not on Sheila's perceptions of the class? We might call this thinking in action the 'wisdom of practice.' Ironically, we know very little about it. How can we encourage good teachers to make visible to themselves and others their processes and practices?"

It's these open questions AAHE's Forum on Exemplary Teaching and *The National Teaching and Learning Forum* exist to explore. ■

Katherine Nevins of Bethel College in St. Paul meets students where they are in another way. "I try to be very intentional about this business of breaking down barriers and entering into conversation with my students," she said. "One way I do it is I go to class early, and I talk to them. I ask them, 'Have you done the reading? I need to know. Do I need to do a five minute summary or twenty minutes?' "

### Faculty Failures

If traditionally, a teacher's failures automatically became the students's fault, that has changed. Faculty at this forum were more relaxed about discussing their failures, many of which were connected with the challenge of cultural diversity. For example, George Sims, who teaches history at Belmont University in Nashville, told about the day he 'lost it' in class. He was leading a discussion of Dan Carter's book on the Scottsboro Trial. Halfway through the class a few students in the back began making racist jokes, "and only three or four of my students *didn't* laugh," Sims remembered. "I bawled them out, and dismissed class. I told them, 'I will not tolerate these attitudes.'

"I agonized all weekend about what I did," Sims said.

Everyone at the table had a similar story. At the Indiana University of Pennsylvania students don't feel comfortable telling racist or sexist jokes, said a psychology professor from that campus, but, "they're still pretty homophobic."

At Transylvania University in Kentucky, Jack Furlong says students lambast the Freshman Studies program as an indoctrination into feminism. "It would be easy to assign readings on racial minorities and discrimination; that's distant there. There's only about a 1% minority population on campus, but men and women ... that's a different story."

Perhaps the redeeming corollary to this line of discussion was that it expressed disappointment but not shame. Not only had the specter of research as the sole test of academic worth vanished for these faculty, so had any sense that a good teacher is a good teacher for all students.

"The pressure to be *very* good at research and *very* good at teaching is a pattern for humiliation," said Eugene Rice, provost at Antioch College who led the discussion on Boyer's *Scholarship Reconsidered*. "You can't be *very* good at both of them at the same time," he said.

### A Subversive Suggestion

While this group of faculty may have been milder mannered than the 1989 group, it too had its feisty side.

In discussing Boyer's book, Rice talked of making teaching as cosmopolitan and public as other forms of research. A group of faculty from large research institutions strongly disagreed. Speaking for her table, Bonnie Wheeler of Southern Methodist University said they found Rice's suggestion "subversive." Teaching, she said, is now a "local" phenomenon and as such it can be free from the power issues that would come with making it more public in a national, professional sense. Wheeler said her group resisted the notion of adopting another set of vocabulary about teaching (as scholarship) and resisted the notion that publishing is or should be the standard for achieving respectability in teaching.

Surprised, Rice answered that he was primarily interested instead in cultivating a community of internal support for teaching, a community that acknowledged "the connectedness of knowing." Pat Hutchings grabbed the middle ground, saying the central point lay in making faculty views on all these concerns within the teaching movement more public.

### Talking Back Home

As for discussions of teaching back home, a great many faculty seem to have started or to be part of them already. Although the attitude that "real academics don't talk about pedagogy" still prevails on many campuses, on others conversations are well underway. "You have to build for the future," said Prescott Rogers, who teaches religion at the Academy of the New Church College in Pennsylvania. "Look at Socrates," he said. "His biggest influence was on Plato, and through Plato he influences us. He has a much bigger influence on us than he did on his own generation."

A happy by-product of the conversations that are going on is that many teachers who have been working in relative isolation from one another are finding out that they are really much better at what they do than they thought. "I'm thinking of one woman in particular," said Esther Kingston-Mann, "who – in the amazed reaction of her peers – discovered that what she thought was a B- performance was really excellent teaching. Now that people are actually talking about teaching, she's found that she's become a leader and a resource for other teachers on campus." ■

# The Enriched Syllabus: To Convey a Larger Vision

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RECENTLY I COLLECTED course syllabi from 20 faculty members who are unusually well-regarded as teachers and who represent all academic schools in an institution that defines teaching as its primary mission. These syllabi covered many types of information, but something was nearly always missing: a discussion of any pedagogical point, issue, concept, or theory — especially one broad enough to transcend disciplines — that the professor regards as important for the students to consider as they begin the course.

My colleagues are doing an effective, often thoughtful, job of preparing the traditional syllabus. But I would suggest that this nonpedagogical syllabus is increasingly an anachronism. In an era of growing sensitivity to processes of teaching and learning in higher education, the typical syllabus continues to be conceived as a narrowly utilitarian document whose only function is to furnish the student with immediate, concrete answers to the implicit question, "What do I have to do in this class and when do I have to do it?" This is a student-driven syllabus, designed to focus exclusively on the trees because that is what students are most conscious of and concerned about. Little attention is paid to the rich pedagogical forest, not because it is irrelevant to students, but because they are (understandably) oblivious to it and so do not demand that it be addressed.

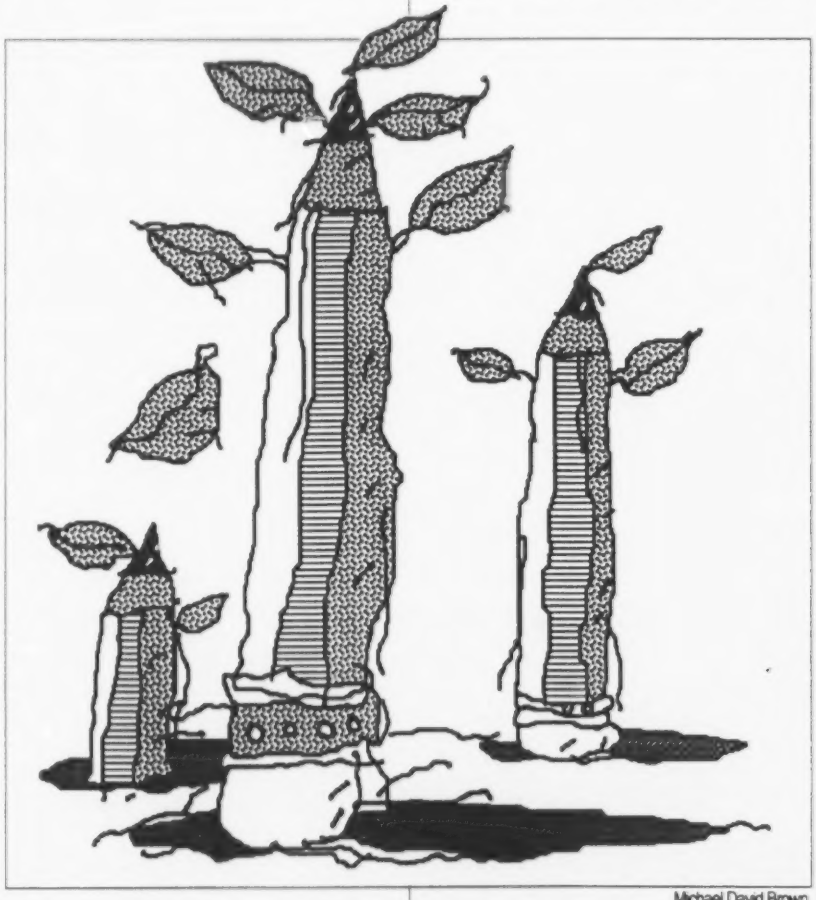
The predominance of the student-driven syllabus is paradoxical, in view of the widespread agreement among educational theorists about the importance of engaging students as active participants in their educational journey. If we take this principle seriously, doesn't it require us to talk to students about pedagogical matters, so that if they do become active agents, they will proceed through the educational terrain with an awareness of larger landmarks than exam dates and office hours? Shouldn't we at least tell them about the principle of active involvement?

A convenient vehicle for exposing the student explicitly to the instructor's pedagogical orientation is the enriched syllabus. More than just a list of procedural details, this syllabus is a teaching instrument. It highlights those aspects of pedagogy — goals, means, rationale — that might encourage and enable students to cooperate more effectively with the instructor's efforts. And by directing students to think about education before they begin thinking about the sociology or the English comp, it reminds them that the purpose of the course is not just to explore a particular discipline but also to contribute to that less visible, transdisciplinary process whose outcome will be, if all goes well, an educated man or woman.

Needless to say, an enriched syllabus can take a variety of forms. What follows are some examples that briefly illustrate a few possibilities.

Under the heading "Pedagogical Guidelines," the instructor might distinguish between the informative and the critical thinking functions of education. In a course that stresses the latter, the syllabus might quote Mortimer Adler (*Paideia: Problems and Possibilities*, Macmillan, 1983), who draws a parallel distinction between "didactic" and "Socratic" modes of teaching. Adler's view of the proper roles of student and teacher can be startling to students (not to mention many teachers). He depicts teachers primarily as midwives who help students give birth to their own intellectual growth:

> Teachers must understand their role in the learning process. They misconceive it when they think of themselves as the primary cause of learning on the part of students. They are at best only the instrumental cause of learning. The primary cause is always and only the activity of the student's mind.



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When that cause is not operative, genuine learning does not take place. When teachers regard themselves as imparting the knowledge they have in their minds by somehow getting it into the minds of students, the result is a stuffing of the memory, not a growth of the mind. Most of the remembered information is subsequently forgotten; and the student's mind at the end of the process is no better than it was at the beginning.

On the other hand, instructors who disagree with this interpretation of "memory-stuffing" could present the views of E. D. Hirsch, Chester Finn, and others.

The instructor who wants to encourage critical thinking might introduce students to this complex topic, perhaps by outlining critical thinking in three dimensions:

- ***skills***: such higher-order cognitive operations as analyzing, integrating, interpreting, explaining, evaluating, applying, abstracting, distinguishing central from peripheral, and discriminating between degrees of truth.
- ***attitudes***: the willingness to grant due process to ideas — even those that others may disapprove of and especially those that one finds personally distasteful — before rendering an informed and reasoned verdict.
- ***worldview***: the recognition that the world is often not what it seems, and hence must be approached with an outlook that is skeptical, penetrating, tentative, and complex.

Either in the syllabus itself or in the discussion of it in class, the instructor can illustrate each of these dimensions, possibly provoking a lively discussion along the way. For example, most students believe that suicide rates are highest during the winter, that poverty rates are highest among the elderly, that thousands of American children are kidnapped by strangers each year, and that Abraham Lincoln firmly believed in the social and political equality of whites and blacks. When shown that none of these is true, students learn why the critical thinker's worldview rests on a hesitation to take things at face value.

According to the research of William Perry and others, the educational process can induce a fairly predictable sequence of changes in students's thinking, e.g., from a black-or-white outlook to an appreciation of grays. It would seem that being apprised of these developmental stages could help students accelerate their own maturation. Brief summaries of this research, suitable for inclusion in a syllabus, may be found in various publications, including this one (premier issue).

The question "what is college education for?" can be raised by citing survey data, published in *The Chronicle of Higher Education* and elsewhere, on the shift toward careerist values among college students over the past 25 years. Liberal arts faculty may want to discuss the personal and social benefits of liberal education, perhaps with the aid of Ernest Boyer's *College* (Harper & Row, 1987). Instructors of general education courses could explain and defend the concept of a general education core.

Faculty who believe in holding their students to high standards might pause to discuss this philosophy, both as it applies to the course and as a pedagogical issue in its own right. Many students are surprised to learn of the near unanimity among educational analysts regarding the need to raise standards. It may be instructive for students to overhear such advice to faculty as the following from Chickering and Gamson ("Seven Principles for Good Practice in Undergraduate Education," *AAHE Bulletin*, March 1987): "Expect more and you will get it. High expectations are important for everyone — for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated."

Instructors who are not acquainted with the professional pedagogical literature can find in the popular print media a wealth of commentary on educational issues that can be usefully quoted, summarized, or photocopied (with permission, of course!). Examples: a column by *Newsweek*'s Robert Samuelson urging a denial of federal financial aid to academically weak students, a *Time* article claiming a new intolerance has turned things "upside down" on American campuses, a piece in *The New Republic* in which Albert Shanker discusses the implications of an erosion of the verbal skills of American college students, syndicated columnist Richard Cohen's conclusion that it is time to react to declining SAT scores by telling students that they don't realize how "dumb" they are, and even a Doonesbury strip lampooning students who mindlessly write down everything from a lecture that spouts nonsense.

Such techniques as these, and many others that instructors could devise in accordance with their needs, enable faculty to offer consciousness-raising considerations that many students would indeed ask for, if they knew enough to ask for them. Thus the enriched syllabus is actually more student-oriented than the student-driven syllabus, a fact quickly recognized and appreciated by the more serious among them (it doesn't happen every day, but I've actually been thanked). This leads one to wonder why the laundry-list model remains so stubbornly entrenched. But probably it is no accident. After all, the student-driven syllabus lets faculty off a rather large hook: It reduces, or even eliminates, the necessity to articulate, evaluate, and refine our pedagogical perspectives. By expecting us to disclose in broad daylight the larger precepts that guide our teaching, the enriched syllabus compels us to be more reflective about such matters in the first place. Perhaps this is its greatest virtue.

Sources:

*Robert Samuelson column on denying Federal aid to academically weak students* — Newsweek *(May 27, 1991, p. 62; June 24, 1991, p. 44; October 28, 1991, p. 51).*

Time *article on the new intolerance on campus — April 1, 1991, pp. 66-68.*

*Albert Shanker article on declining verbal scores on American campuses* — The New Republic *(January 6, 1992, p. 2).*

*Syndicated newspaper material appears at different times in different papers across the country. If you are interested in seeing a copy of Richard Cohen's column on SAT scores or the Doonesbury cartoon strip mentioned, contact the author:*

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PROFILE

# Thinking All Over The Brain

WHEN ROLF FASTE was in grade school, he remembers sitting in science period one day drawing a cross-section of a rocket ship. It was a hydrogen rocket, and he was trying to figure out how you'd keep the liquid hydrogen from heating up before it got to the combustion chamber. Absorbed in this problem of science and engineering, it came as a shock when his teacher came up and told him to stop drawing. "This is science. Art is on Tuesday," the teacher said. Among other influences it had, the experience made Faste resolve to "teach better than I was taught."

Now a professor of engineering and director of Stanford University's Product Design Program, Faste has everybody draw. "Art is a means of exploring reality with your firsthand perceptual hardware," he says. For him, ignoring the grammar of visual perception is tantamount to shunning one of the five senses or forbidding the use of reason on Fridays. Says Faste: "Most people when they draw look at their paper, not at what they're drawing. It's not a skill; it's a perception issue. And if you look at what you're drawing and follow some guidelines on how to use your eyeballs and your fingers, your fingers will do a real good job of duplicating what you see."

While it's the easiest to picture, Faste's focus on art is only one element in a passionate, holistic approach to teaching and learning, research and exploration. It's an approach that has made Standford's Product Design Program one of the most innovative and respected in the country, and an approach that is offering new leadership in the way engineering — not just product design — is being conceived of and taught.

## A Need For Synthesis

"We make these assumptions that you either do this or you do that," says Faste. "The things I was doing in the margins of my notes from grade school on were frowned upon, and were seen as art, not engineering or a manifestation of thinking about scientific issues. So that's the culture we exist in; yet the problems we face are complex and involve human aspirations and needs, and there are lots of aspects of technology to be brought to bear on them. So there is a profound need for *somebody* to be doing synthesis."

Drawing, or seeing with the fingers, is only one of the stretches Faste asks his students to make. His courses — with such revealing informal names as "Ambidextrous Thinking," "Visual Thinking," and "Need Finding" — come with lots of assigned reading, but they approach learning primarily through activity. "Students work in small groups or large groups brainstorming, working on projects. We try to have everything our students learn come through an activity of doing it and coming to a conclusion about it. In 'Visual Thinking,' and 'Ambidextrous Thinking' we don't talk more than about fifteen minutes out of two hours, and those fifteen minutes are spent explaining the next activity or assignment.

"I've probably talked to you more in this interview about these ideas than I do with my students," Faste laughs. "They learn by doing."

## Need Finding

Activity of the kind Faste and his colleague David Kelly in the Product Design Program call for leads to leadership, Faste believes. "Leadership is having a vision of what needs to be done and of how to go about doing it," says Faste. "Leaders are the people who assign problems to people. And mostly that's what people learn in school: how to do what they're told. They're told what the issue is.

"But in our program, it's different," Faste continues. "I teach a course called 'Need Finding,' and in it, we spend a whole quarter putting ourselves in human situations and just seeing what is missing. The whole course is one big perceptual problem: how to see problems, how to see what no one else has identified."

"Leaders are the people who assign problems to people. And mostly that's what people learn in school: how to do what they're told. They're told what the issue is."

Rolf Faste

"Need Finding" plunges students (graduates and undergraduates) into a crucible of real-life experience, a place that makes demands not just on what they know, but also on who they are. Forty students divided into teams of two take up positions in twenty different situations in San Francisco General Hospital. The situations cover the spectrum ranging from the emergency room to security, the laundry, and Fire Rescue One. "They go there for twenty-four hours, sleep in the fire house, ride the trucks. This year on their watch there were seven suicide attempts, two of them successful. They experience things like that, real life and death." In that experience, Faste argues, "Students come to grips with their own personal resources as humans, and think about what it is they want to accomplish and work on."

## Accessing Affect

To put it another way, just as Faste insists his students open their seeing to what their often unused ability to draw has to teach them, his course

design calls for a similar openness to a problem's affective dimensions. The value of this approach is being felt throughout the engineering program at Stanford and across the country. "I gave an hour guest lecture last week to a class in Manufacturing which is televised nationally on accessing one's emotions and what that has to do with this whole notion of quality," says Faste. "They get a lot of these bean-counting kinds of tools to apply to manufacturing, but I was actually *invited* to come and speak about something so unquantifiable as emotion and its relation to quality." Only five years ago, that wouldn't have happened, he says. But more and more engineers throughout the discipline are coming to understand the importance of what Faste calls "this 'fuzzy notion' of quality."

> "Creativity is risk taking," says Faste, and therefore "creativity isn't uniformly good. It's upsetting the apple cart."

When he took a degree in architecture at Syracuse University, Faste was seen as an engineer visiting the art school. When he started at Stanford in 1984, he was seen as the artist on the engineering faculty. "We used to be seen as the lunatic fringe," he says, but that's changed.

"Engineering schools really value their left-brain skills — all the number- crunching, formula-tossing activities: It's really become a primal thing with engineers. And then here came all these people mucking around with the arts and trying to merge all that with technology. I guess we're tolerated because the synthesis we achieved often did lead to startup firms which were successful. It's partially the culture here, the silicon valley mentality, this kind of thinking was kind of in the air and it was just manifested here in this program."

Faste is quick to point out that it takes both sides of the brain to make a whole. "That's why I retitled the course 'Ambidextrous Thinking,' to value the left-mode thinking skills my engineering grad students possess," he says. You need both, he says. Quantitative, left-brain thinking skills put ideas to the test, but right-brain holistic approaches allow ideas to come forward and be tested that would probably not even be considered without the freedom of discovery and synthesis characteristic of less logic-driven ways of thinking.

## A Creativity Course For Faculty

For the last three summers, Faste and colleague Bernie Roth have been applying the approach they take to teaching engineering to the challenge of teaching engineering faculty. With sponsorship from the American Society for Engineering Education, they've been leading a course called "Creativity," but like most of Faste's courses it's a nominal title for an experience that might be called "How to loosen up and bear down in new ways in your thinking." "The funny thing is they all come expecting to be taught a course where we get up and talk," says Faste. "They think they'll be able to go home and tell their deans about it; maybe offer their own course where they talk about creativity. Well, we don't talk about creativity; we manifest it. So they have this kind of intense two-week thing that they didn't expect where their own personal motivations and personalities are being challenged, because that's the only source of creativity that we know of."

Our culture and most successful cultures, Faste believes, discourage creative behavior. "Creativity is risk taking," says Faste, and therefore "creativity isn't uniformly good. It's upsetting the apple cart." A convention or pattern of conventional thinking, he points out, becomes a convention because it works; it's safe. "But it happens that we're in a strange period today where being conservative, being safe, will lead a healthy

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corporation into ruin probably within five years," Faste believes.

Can the same be said of conventional teaching? Faste seems to think so; that's why in the middle of his summer workshops, teaching suddenly becomes the subject matter in the discussion of creativity. "We do a whole day on teaching," Faste explains. "We line up five of the most outstanding lecturers that teach at Stanford — each of them with a different style — to give a twenty minute segment of one of their good lectures, just so the workshop participants can see how many different approaches there are to conveying subject matter."

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As one might expect, Faste quickly turns from showcase to looking glass. "Then in the afternoon — and they don't know this is going to happen," Faste continues, "we say, 'Ok, we're going to give you five minutes to think of the intro to one of your favorite lectures, and then, in front of color video cameras and everything, you're going to stand up here and start your course.' And so they stand up and start giving their favorite lecture. And we deal with all the issues that come up, like taking charge of the course, creating a space, projecting your own enthusiasm, lecturing to the blackboard — all of them, large and small." If the experience sounds gruelling, it is. Participants are stopped and asked to begin again as many as a dozen times.

Out of the fire comes stronger metal, Faste believes, forged in a fuller (if painfully achieved) awareness of all that's going on when one teaches (or at least more of what's going on when one lectures). "Since the Renaissance we've evolved a point of view in the West that's very mechanistic," Faste says quietly. "We're still quite Newtonian and linear in our thinking. The very word 'thinking' we think of just as a word meaning 'being logical.' All the other modes of thinking, we discount." If Faste's work as a teacher has a message, he says, it's simple: There's more to thinking than ratiocination. It takes two halves to make a brain — and a life — whole.

*For information on the summer workshop or Professor Faste's approach to teaching, contact :*

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## More On Visual Thinking/ Visual Literacy

Our story on "Visual Literacy" in the last issue of *The National Teaching and Learning Forum* created a great deal of interest, interest which, in part, led us to Rolf Faste. Many readers wanted further sources of reading on these topics.

Professor Robert Blystone commends two books by Edward Tufte as thought-provoking looks at a multitude of (often beautiful) ways to present visual information: *The Visual Display of Quantitative Information* (1983) and *Envisioning Information* (1990). Though he'd published widely as a political historian specializing in the use of statistics, Tufte was ahead of his time with these extremely handsome books; he ended up publishing them himself. They are available from Graphics Press, Box 430, Cheshire, Connecticut 06410.

Professor Faste cites a number of more theoretical works he finds of great value:

Robert McKim, *Experiences in Visual Thinking* (Brooks/Cole Publishing Co., 1980)

Rudolf Arnheim, *Visual Thinking* (University of California Press, 1971)

Robert Root-Bernstein, *Discovering* (Harvard University Press, 1989).

And in addition he commends Betty Edwards's well-known *Drawing on the Right Side of the Brain* (Houghton Mifflin, 1979).

**TA FORUM**

# A Paradigm Shift In Instructional Development?

ANYONE WHO'S EVER ORGANIZED a conference can understand what Marilla Svinicki means when she says she was so busy planning and playing host to the Third National Conference on the Training and Employment of Graduate Teaching Assistants in Austin last fall, she hasn't had time until recently to assess the meaning of what went on. Indeed, judging by the article in *The Chronicle of Higher Education* one would have to conclude that not much progress had been made in either the thinking or practice of instructional development specialists since the Second National Conference in Seattle in 1989. But Svinicki says, in fact, some major attitudes have changed — or are about to.

"We're moving well beyond trial-and-error learning and show-and-tell instruction to becoming reflective practitioners," says Svinicki, a psychologist who serves as director of the Center for Teaching Effectiveness at the University of Texas-Austin. "I see progress being made by the cutting edge of the field — especially in cognitive science and motivational research — and it all has implications for what we teach teachers and how we teach TAs."

## Reflective Practitioners

When Svinicki speaks of a movement toward becoming reflective practitioners, she refers both to instructional developers and to faculty. The shift among the ID crowd follows a growing awareness of how faculty really think, she says. "For years we've had to face the question, 'Why does something that seems so clear to us — something like 'instructional objectives,' for example — seem so opaque to these really smart people, the faculty?' The breakthrough is that we're finally understanding why we have been meeting such resistance for so long."

The breakthrough has come slowly. Svinicki traces her own sense of why back to a speech by Lee Shulman of Stanford called "Toward a Pedagogy of Substance." "He was saying you can't learn about teaching in general, only within a specific discipline," Svinicki recalls. "I was skeptical, even troubled by the speech, and then I started to reflect on my own work with faculty and TAs.

"I believe Lee Shulman has something, but we're all misinterpreting it. It's not that you can only learn about teaching within a discipline, it's that different disciplines have different epistemologies. They think about knowledge differently, hence they think about learning differently and teaching differently."

> "It's not that you can only learn about teaching within a discipline, it's that different disciplines have different epistemologies."

## Whose Paradigm?

"For example," she continues, "if your view of *being* an expert in a discipline is synonymous with systematizing the facts, then your view of *becoming* an expert in that field follows from that, and as a result, you teach the facts." On the other hand, she says, "if your discipline sees itself as developing and challenging theories, restructuring information, that means you have a different view of learning." "For you," Svinicki says, "it's not facts, it's process, model building, analysis."

In essence Svinicki says she's talking about finally accepting what she calls "disciplinary ethnocentrism." So how is realizing that faculty think differently a positive development?

"Well," says Svinicki, "the question now becomes, 'Should we try to open a new paradigm for faculty or — as specialists — adapt cognitive psychology, learning theory, etc. to the paradigm they're already using?' " To ask faculty to think differently about teaching and learning may be too much to ask if it requires them to think differently about their discipline. Hence she favors the adaptive approach with an alternative way of looking at things thrown in occasionally.

"If that's being paternalistic," Svinicki chuckles, "I don't care. I'm a good parent or at least I try to be." More seriously, she says, emphasizing the teaching theme, the instructional development theme, that transcends disciplines: "We have to help faculty be aware of the meta-cognitive stuff that's going on. I'm not going to try to convince them to adopt my paradigm of knowledge. I want them to become reflective practitioners within their own, to realize the *reasons* for what they do. Teaching is not necessarily an art."

## Art Is An Expert System

The word "art" rolls off Svinicki's tongue laden with disgust. "Arthur Clark wrote somewhere that any sufficiently advanced technology looks like magic; I feel the same way about expert teaching. 'Art' may be an 'expert system.' There are a lot of really great teachers who are great because they've worked hard and reflectively at it. When they really get good at it, it looks effortless. Too many people use the word 'art' to hide behind."

So what does any of this have to do with TAs? Two things, says Svinicki. First, most faculty were once TAs; so it makes sense to invest heavily in training TAs to teach now while they're still forming their teaching personae. Second, the focus on training TAs inevitably draws in faculty. "The more we teach TAs, the more they put the pressure on faculty to learn about teaching and learning. When they're asked to help their TAs, faculty take the ball and run with it."

Faculty are also persuaded by solid research, says Svinicki, and that's now available. "Faculty will accept a lot more suggestions about teaching when you can say to them, 'Research has shown that these approaches will have these effects on student learning.' "

Taken together, says Svinicki, these changes in attitude are already changing the way we talk and think about teaching and learning.

*Contact Marilla Svinicki at the Center for Teaching Effectiveness, Main 2200, University of Texas, Austin, Texas 78712-1111. Phone: (512) 471-1488.*

CURRICULUM

# The Library And The Classroom: Old Neighbors— New Friends

"TRADITIONALLY," SAY A team of librarians and biology teachers at the University of Wisconsin-Madison, "the role of library instruction in an undergraduate curriculum is limited to a 'one-shot' library lecture/tour that students *may* get if any of the courses they take during their undergraduate years is offered by a faculty member who sees the value of actually teaching information-seeking skills and is willing to make room in his or her syllabus for such instruction."

"For many students," they continue, "the haphazard and one-time nature of such instruction devalues and oversimplifies information-seeking skills and strategies and leaves them woefully unprepared for success in an information-driven society."

## Beyond the 'One-shot'

Beginning last fall, this team, led by Abigail Loomis, coordinator of the UW's library user education division, and Ann Burgess, director of the biology core curriculum (or "Biocore"), started building a different bridge between the library and and the classroom — at least for biology students. "We want to teach them that information-seeking is not serendipitous," says Loomis. To do that, the team designed a series of instructional modules distributed throughout the four-course Biocore curriculum, a self-selecting sequence designed for honors students and biology majors. Through the integration of more and more sophisticated library work into coursework, the team believes students will become independent, life-long learners equipped with information-seeking strategies and skills that will have become an integral part of their day-to-day lives.

Indeed, the Biocore team hopes these modules will be adapted to courses in other departments on campus and eventually to other campuses across the country.

The first two semesters of the Biocore sequence include five instructional modules.

1) Hands-on instruction in the use of the university's computerized on-line card catalog, including tactics for narrowing and expanding searches

2) An introduction to the different types of reference sources, including their purposes, uses and methods of arranging topics

3) An introduction to the basic access tools for periodical literature: print indexes and electronic databases

4) The ins and outs of CD-ROM databases such as Medline and BIOSIS, and

"Traditionally, the role of library instruction in an undergraduate curriculum is limited to a 'one-shot' library lecture/tour that students *may* get if any of the courses they take during their undergraduate years is offered by a faculty member who sees the value of actually teaching information-seeking skills and is willing to make room in his or her syllabus for such instruction."

5) Evaluating sources, an extension of critical thinking skills to library work.

"This transformation in user education — especially teaching users to make choices among information sources — has been coming for about the last five years," says Loomis. Indeed, it was the librarians who approached the biology department with the idea for the partnership. Having a sequence of courses was important, since they were eager to get away from the 'one-shot,' but the university no longer has a common sequence of required courses for freshmen. The Biocore curriculum offered a sequence and a highly motivated group of students — an ideal testing ground for this building-block approach.

## Knowing the Sources

The planning for the course became a learning experience in itself. "It turns out to be a great deal of work," says Ann Burgess, "much more than we expected when we started, but we also learned a lot." Burgess says she enjoyed working with the librarians because frankly they have "a better grasp of how information resources are organized than many faculty do." "In general," she says, "biology faculty didn't know the full range of resources and search capabilities as well as the librarians. They're specialists; they're used to consulting journals in their particular area."

Indeed, since the technology has come on so quickly, how many faculty can claim facility with even the basic Boolean operators — "or," "and," and "and not"? Used properly, these terms allow students to expand or narrow searches for material either in the computerized card catalog or in one of the more than twenty CD-ROM databases available on the campus network.

## Pickle Jars and Taxonomic Guides

The integration of the library modules into other coursework is key for both librarians and biologists. The module on evaluating different kinds of reference works, for example, begins not in a reference room, but in a marsh. "We take the students to the University Bay Marsh," explains Burgess, "and we put on the chest-waders and collect specimens. Then we bring them back and make aquariums in big pickle jars." The jars are filled with organisms — including many the students didn't expect — but students must then select just one as the object of their library research.

Through an extended series of questions that ask not only for information, but also the sources of it,

the exercise introduces students to field guides, taxonomic guides, biological encyclopedias, biological dictionaries, and advanced biological textbooks. "Does your question involve finding out the taxonomic hierarchy of an organism?" asks a sheet of tips on finding the answers. "Then your first choice of reference sources should be a taxonomic guide."

"There is no hard and fast way to predict at which taxonomic level a reference work is going to list entries in its index," the tip sheet continues. "Some may list entries at the genus level; others may list at the family level or higher. The rule of thumb is to start your search at the most specific level and then if you don't find information at that level, go to the next level in that organism's hierarchy."

## 'But My Dad Takes Psychology Today . . .'

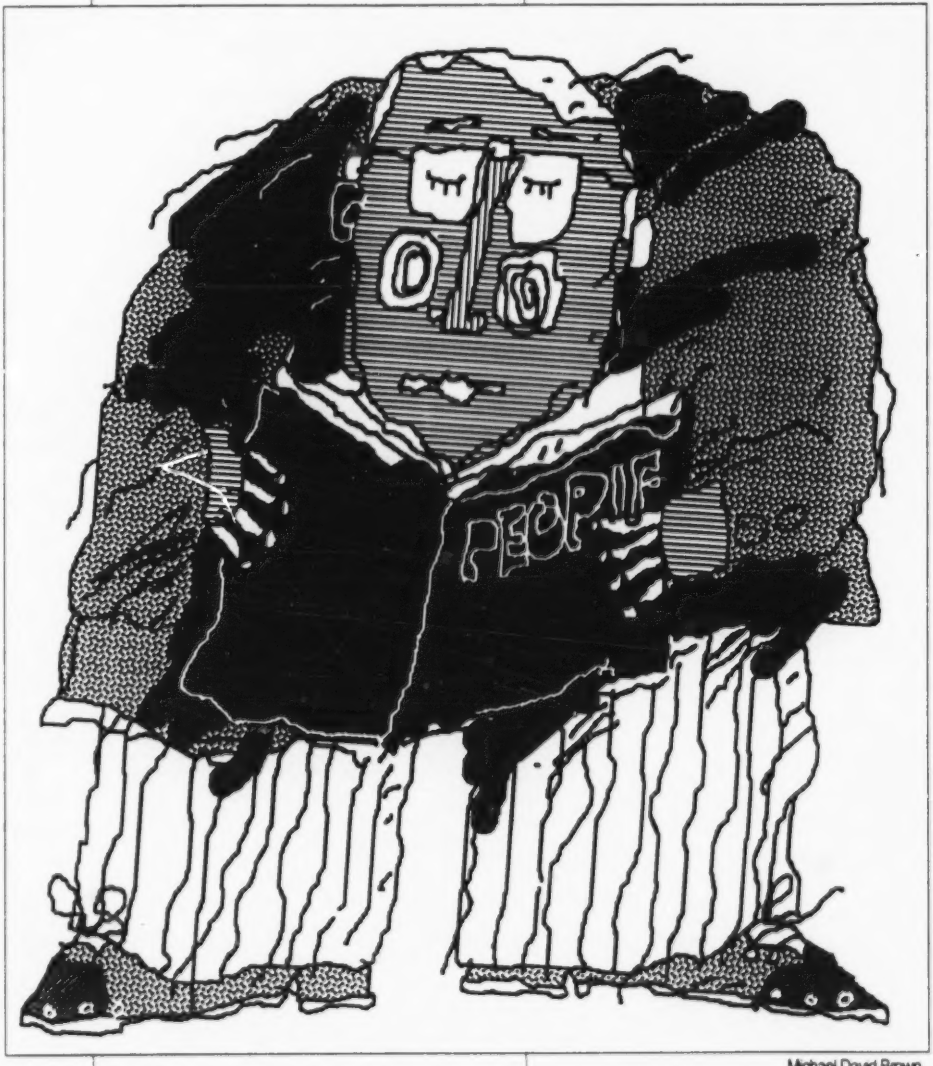
Guidance in using the library moves students from novices to experts rather quickly. But they enter as novices in a variety of ways and need many different kinds of coaching. "A typical freshman might consider *People Magazine* an OK source for a paper," says Abigail Loomis. "We have to teach them the difference between *Psychology Today* and the *Journal of Abnormal Psychology*."

"We have an exercise called 'Don't Believe Everything You Read,' " says Burgess. It's basically an exercise in critical thinking, she says. Students receive an article from the popular press (in this case *Newsweek*'s January 11, 1988 story on "Eve," the mitochondrial mother of us all). They compare it with an article from a scientific journal. "Who's the author?" they're asked. "Who's the audience?" "What's the intent of the article?" "Does it show any cultural bias?" "Assumptions?" "Does the article present assumptions as facts?"

By the time they've finished the module, students have learned something about biology and something about thinking for themselves.

## What Faculty Learned

Running the modules has taught faculty a thing or two as well. One of the modules involved looking at a number of volumes kept in the main library's reserve room. "So we told the students," remembers Ann Burgess, "that we were giving them plenty of time (three weeks) because if they all waited until the last week, they'd be in trouble." They all waited until the last ***day***. "Now we have staggered due dates for the assignment," she says.

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**WORKSHOP**

## Critical Questions

PROFESSOR NORM FERGUSON of Augsburg College believes every college teacher has a philosophy of education. He also believes that philosophy seldom gets articulated or discussed "in an intentional manner." To help the discussion along on his own campus, he put together *College Teaching Strategies for Liberal Arts Education: A Handbook of Assignments & Exercises to Promote Active Student Participation in Learning.* In the introduction, Ferguson writes that while effective and meaningful liberal arts education should always address the big four — WHAT? HOW? WHY? and WHO? — it tends to focus on the "What," the subject matter content. The problem with that, says Ferguson, is that it panders to the fragmentation of knowledge:

" 'Academic disciplines' are most effective when they are used as LENSES to see certain aspects of life more clearly. They provide a focus and an orientation to facilitate understanding. However, disciplines can also become BLINDERS that provide an overly narrow view and promote the development of tunnel vision. Should this be the orientation for information that is imparted to undergraduate liberal arts students?"

Campuses across the country grappling with core curriculum and general studies issues are asking very similar questions.

Ferguson's assignments and exercises come from a variety of sources. What makes his book interesting is the place each takes in one particular professor's practice, his quest to become a better teacher. The top half of each page describes an assignment or exercise; the bottom half describes the rational and purpose. The following is a quick, in-class exercise that helps form the class culture for the term and focus students's attention on their responsibility to think and question.

" 'Academic disciplines' are most effective when they are used as LENSES to see certain aspects of life more clearly. They provide a focus and an orientation to facilitate understanding. However, disciplines can also become BLINDERS that provide an overly narrow view and promote the development of tunnel vision. "

### Criteria for a good discussion question

I ask students to take two minutes and write down on their own their ideas about what makes a good question for class discussion.

After the two minutes are up, we have a class discussion. I write their ideas on the board. Students are usually able to generate at least 5 to 8 criteria.

I distribute copies of the criteria to each student at the next class meeting and tell them to refer to the sheet whenever they are asked to develop discussion questions for an upcoming class meeting.

One of the reasons for this exercise is to facilitate the students's critical thinking ability. That is, I ask THEM to generate the criteria instead of me just telling them what I think are important criteria.

Students are actively involved in generating ideas this way. I believe this helps them develop their own criteria for self-evaluation. Later in the term I use their self-generated criteria when giving them feedback about the discussion questions I have asked them to write.

I usually do this exercise during the first two weeks of the term.

*Copies of the book are available for $3.50 through The Center for Faculty Development, Augsburg College, 731 21st Avenue South, Minneapolis, MN 55454. Phone: (612) 330-1092.* ■

This publication is based on work sponsored wholly or in part by the Office of Educational Research and Improvement, U.S. Department of Education, under contract number RI880062401. Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government.

**The National Teaching & Learning Forum**
**ERIC Clearinghouse on Higher Education**
**The George Washington University**
School of Education and Human Development
One Dupont Circle, Suite 630
Washington, D.C. 20036-1183

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THE NATIONAL TEACHING & LEARNING FORUM

Volume 1 Number 5 1992

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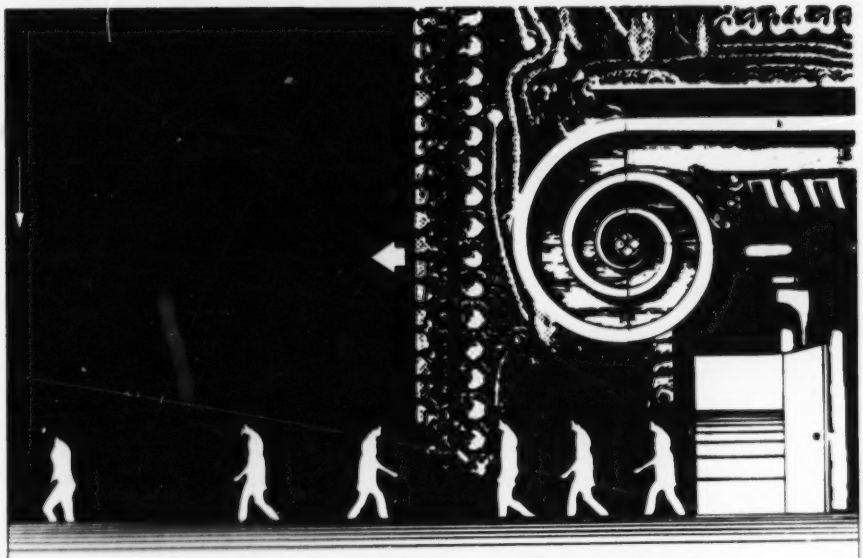


# Diversity and Learning Theory

HUGE DEMOGRAPHIC changes in today's student body have put the word "diversity" on almost everyone's lips. But the implications of these changes for actual classroom teaching remain unclear. Does the proper response to diversity lie in an expanded knowledge of world cultures? the retooling of faculty into renaissance men and women comfortable in all the cultures of the global village? Certainly, more knowledge of and sensitivity to other cultures could help, but, some argue, approaching diversity by acquiring more information about differences may as easily lead to a fuller rainbow of stereotypes as to better teaching and enhanced learning.

The path toward better teaching, says Patricia Murrell, director of the Center for the Study of Higher Education at Memphis State University, points inward toward a deeper understanding of human development and of how human beings — as a species — learn. The enormous diversity in those phenomena, say Murrell and her colleagues, probably represents the master key, the proper first focus for faculty in living out their roles as teachers.

## Who Are Your Students?

"The first question for a teacher is 'Who are your students?'" says Murrell. Of all the possible (and often easy) answers that spring to mind, Murrell maintains faculty need to concentrate on those where they can make a difference. "I think the answer to that question is most appropriately given in terms of features of your students such as developmental stage, learning style, life cycle phase, rather than in terms of variables that the teaching probably cannot impact," she says.

"Let's say I have a young black man in my class," Murrell explains. "What is more important? — that he is black, or that he learns in a certain way? I can't do anything about his being black," Murrell exclaims, "and I wouldn't want to!

"The point is that there is as much diversity within the black male group as anywhere else. If, as a teacher, you take your cues from the color of a person's skin, you're going to miss the richness of that person, the diversity of their being."

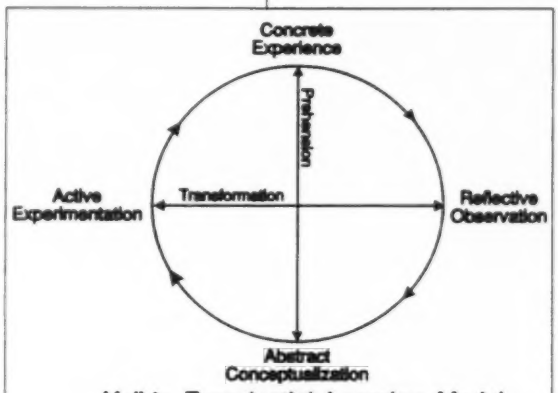
## The Kolb Model

Best known for her work on learning styles, Murrell champions David Kolb's experiential learning theory as a reliable compass for negotiating the deepest, yet perhaps most reachable, diversity affecting teaching and learning. Like Kolb himself (see "What Kolb Says" below), Murrell puts less emphasis on the styles derivable from Kolb's theory than on the two dynamics of the learning model at the theory's core. Too much talk of learning styles, she admits, can become a soft form of stereotyping in itself. It's the cognitive dynamics of learning that matter most, she says, and the best model

she's found for understanding those is Kolb's.

A thumbnail sketch of Kolb's model starts with a circle bisected from top to bottom and from left to right. The two bisecting lines describe the two fundamental dynamics of how humans learn. The circumference of the circle outlines the learning path they follow in moving from the most basic to the most sophisticated levels of cognition.

At the top of the circle stands concrete experience; at the bottom lies abstract conceptualization. To the right stands reflective observation; facing it on the opposite side of the circle waits active experimentation. In a normal learning cycle, humans move from concrete experience of some kind (and it may be vicarious experience), through reflection on their experience, into conceptualizing abstractly from this body of experiences and reflections (some old, some new), until finally they begin to experiment with their newly formed theories by putting them to the test of additional experiences, further reflection and so on.



Kolb's Experiential Learning Model

The beauty of the Kolb model for Murrell is that it places an enlightening framework around a great variety of approaches to teaching and combines them meaningfully with what's known about human development. "You can use the Kolb model by itself in a number of different ways because it is a learning model," says Murrell. "A person looking for a way to vary his classroom activities, a sort of technique-y thing, can access it at that level and get some help. And if that's all you want, then you've got a good model there. But the thing that I would question is *what is the purpose of learning?* I don't think we want students learning just for the sake of storing information in their heads. I think we want students to learn because learning is the process by which development occurs. I think that's why learning is so critical and why it is so important for us to help individuals become masters at the art of learning, because if I stop learning then I'm going to stop growing and developing."

Murrell's colleague Todd Davis, associate professor of Higher Education at the University of North Texas and co-author with Murrell of a forthcoming book on applying learning theory to the diversity challenge, goes a step further. Davis believes understanding and using learning theory makes clear the student's responsibilities in learning.

"What the Kolb cycle does," says Davis, "is remind us as teachers in a very unloaded fashion that the students we have before us are not homogeneous and that what makes them different is not the demographics — it's not the race and the gender or the class and so on — it's the way they approach the academic material.

"Students surely bring different things to the classroom," says Davis, "but what matters most to what they take away depends on what they *do* in the class not what they *brought* to it."

"I think that's a crucial and a very hopeful message," says Davis.

Its crucial hopefulness lies in the concept of learning as a responding action — not a reaction — to what it is that teachers do. To grasp that idea, Davis, Murrell and Kolb all say focus on the two intersecting dynamics in the experiential learning model.

## Neglecting Meaning

"The most important thing about Kolb is those two vectors: *prehension* and *transformation*," Davis continues. *Prehension* is basically the presentation of material, he says. "And that's what we as faculty members spend most of our

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**The National Teaching & Learning Forum**
is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education.
One-year individual subscription: $39.

Application to mail at second class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:
**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, D.C. 20036-1183

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time thinking about. 'Should I present examples first and then theory, or the other way around?' But what Kolb says, and what we fail to do most miserably, is recognize that for material to make sense to people or make a difference in their lives, they have to do something with it. They have to own it. They have to either think about it, reflect on it, make other connections or do something with it, put it in practice, take it home or to work."

Faculty know the axis well, says Davis, the line from facts to theories, from concrete experience to abstract conceptualization. But the equator running from reflective observation to active experimentation — the "meaning-making line," as Pat Murrell calls it — generally lies in the doldrums. "We don't tend to the meaning making," says Davis. "We tend to the presentation, and we assume that if we presented the material well [students have] got it. Not necessarily. They may be able to cram, to spit it back on a test, but all that means is that they can jump through a hoop."

A better approach, Murrell and Davis believe, lies in "teaching around the circle," referring to the diagram of Kolb's learning theory. "The whole point of education," says Davis, "is that a person develop capacities in all four of the modes through which people learn."

"We have to think about the level of cognitive complexity at which we are presenting material," says Murrell, "and ask ourselves 'Are we using processes that push students toward more cognitive complexity or are we pandering to their dualistic way of learning and not challenging them to get bumped up into a higher order of thinking?' "

A student who thinks dualistically — and most students fresh out of high school do, says Murrell — "is looking for a teacher who is authoritative, and who is going to give him the answer the teacher wants fed back on the test. What I've often said in the workshops I lead around the country on all this is if you put a dualistic student and a dualistic teacher together, you've got a marriage made in heaven."

## Nimble-mindedness and Naming

A faculty member's cognitive dexterity may face a considerable challenge in "teaching around the circle," but embracing it has at least one practical advantage beyond all the idealistic ones, says Murrell: "It keeps us from being bored with ourselves and what we're doing, and it keeps us from being boring to our students.

"Seriously," says Murrell, "the first thing I need to recognize as a teacher is that I, too, am a learner. I need to recognize that I have different learning preferences and that those probably flow over into my style of teaching." Instead of weighing them down with the pressure of being authorities, says Murrell, "one of the most wonderful things that we could do for faculty would be to help them see themselves as active, growing learners as well as teachers. Once I see that I have a preferred way of learning it's much easier to see that in my students."

Murrell believes many teachers already understand the dynamics of learning theory intuitively, but she insists on the necessity of a common language with which to talk about them. "A language, terminology, give you means of understanding phenomena," she says, and a common language opens the possibility of a semantics through which understanding may increase further.

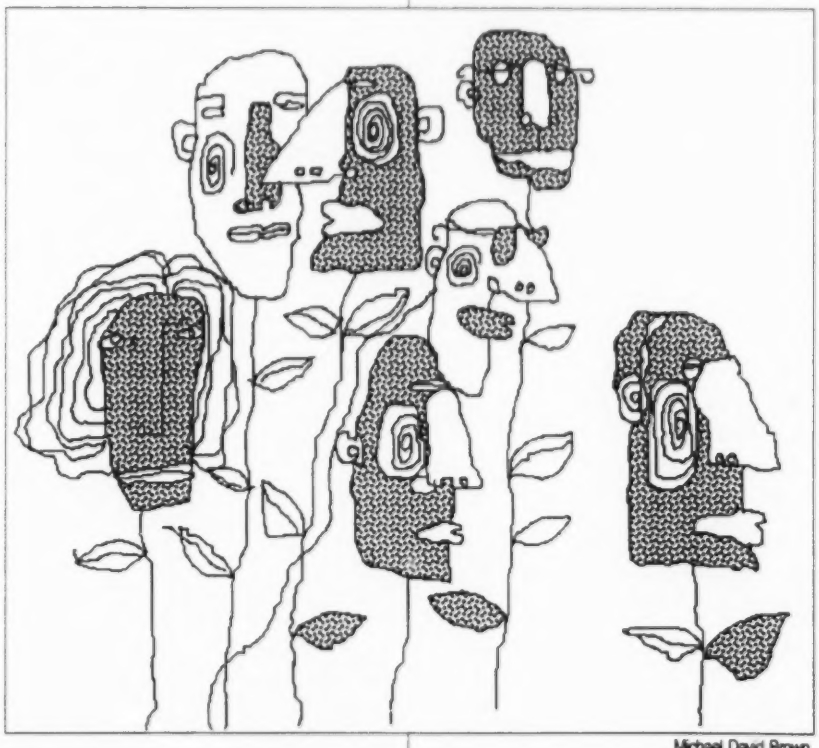
"We need to enter into a dialogue with our students about what it is we're doing, what our goals for our classes are and why we engage in the processes we engage in," says Murrell. We need to demystify for students what we want to accomplish — and that is *not* just an exchange of information. We want to accomplish an increase in their cognitive complexity. We want to move them to a higher level of critical thinking.

"We used to think we were arming or empowering students when we gave them the facts," she says. "Now we realize we must give them the theory [of learning] — not just for a successful college life, but for a successful productive life."

FURTHER READING:

David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development*, (Prentice-Hall, 1984).

David A. Kolb, "Learning styles and disciplinary differences," in A. W. Chickering, et al., *The Modern American College*, (Jossey-Bass, 1981).



Michael David Brown

## What Kolb Says

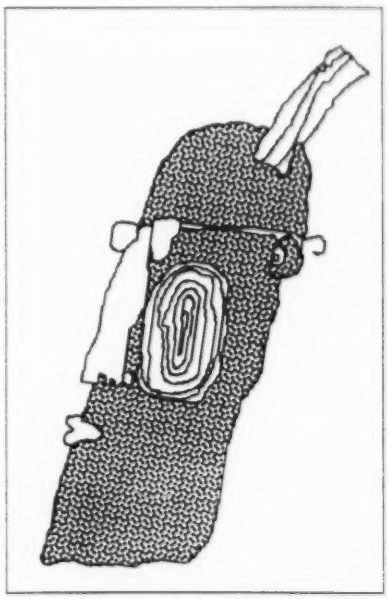
DAVID KOLB SPEAKS WITH A weary confidence about the utility of the learning theory he first described over ten years ago. "The learning cycle theory has held up well, but I think if anything it's only *starting* to be recognized empirically," he admits.

Is his theory the be-all and end-all of insight into learning? Hardly, he says. "It's not so much a theory of learning really as it is a whole framework in which different approaches to learning can fit." The dynamics of the model have the strength of fundamental principles and thus easily embrace a wide variety of teaching techniques, especially the active and cooperative learning approaches.

The approach that doesn't work, says Kolb, is the traditional teaching model where the teacher dispenses the information and the student takes it in. Compared to that arrangement, says Kolb, the experiential learning model "has some real advantages." "One is that it is equalizing," he says. "Everybody gets something, because it's a process in which the teacher, too, becomes an acknowledged learner.

"Moving away from the lecture method was just so exciting for me in the early days," he remembers.

What's the best way to improve teaching? "Focus on learning," Kolb answers. "One of the major implications of using the model is that the teacher sort of becomes a manager of learning. The traditional teacher model becomes a bit boring really."



Michael David Brown

And the best way to increase learning? "Move the focus off the teacher and onto the student."

After ten years of struggling to implement a learning-centered curriculum at the Weatherhead School of Management at Case Western Reserve University where he teaches, Kolb has become impatient with familiar academic structures that, in fact, seem to work against learning. If you want to improve teaching and learning, Kolb says, "take a look at the structures of higher education and if they aren't there for a good reason, get them out of the way."

Take grades for example. "I've never even seen any study which suggests that grades have anything to do with learning," says Kolb. "And so that would be an example of a structure that's there for what reason? If you can't come up with a good reason for it, get rid of it. And create a structure that will facilitate learning.

> What's the best way to improve teaching? "Focus on learning," Kolb answers.

"That's just one example. Take the idea of a course: Why is it that all subjects somehow or another have to have a course? To me the 'course' is the most over-used educational intervention there is. People need to learn something? We've got to have a course. Immediately that brings in a whole other set of structures like credit units and a whole bunch of other things."

These structures aren't just passive, says Kolb; they actively erode innovations made in other areas.

Given such deep complaints, is Kolb at all optimistic that his model may offer some help in confronting the new diversity on campus? "I don't think that learning styles by any means captures all the significant differences among ethnic groups," says Kolb, "but with regard to *learning* I think it does capture some of those differences.

"I think black inner-city kids, for example, learn more in a concrete way, and when they come into a classroom situation where the direction is a very unilateral, abstract model of presenting material, they're the ones who are 'learning disadvantaged.' "

Understanding the modes of thinking involved in learning — and their interrelation — can help teachers see beyond such 'disadvantages' to the freedom of real equality. ■

**TESTS**

## Scratching For Grades

TESTS, GRADES, AND LEARNing: The connections between these three aren't always clear. When teachers work to put the focus on learning, the necessity of tests and grades often appear as stones in the road. For many students, tests create a debilitating anxiety. For them not only are tests not a learning experience, they also aren't a fair arena in which to display what they have already learned.

Professor Art Ellis, who teaches large, introductory chemistry classes at the University of Wisconsin-Madison, has developed what he calls "Test Insurance" to help reconnect the business of testing to the process of learning. The "Test Insurance Page" comes along with the pages of test questions, but it looks very different. It looks like a sweepstakes promotion at McDonald's or an instant-win lottery ticket – except it's an 8.5 x 11 sheet.

### Clues Under Gray Goo

If students need a clue to help them solve a particular problem, they can take a coin and scratch away the opaque gray gummy stuff next to that question number. Each clue they uncover costs them points, but then, five points spent arriving at the correct answer to a twenty-point question adds up to a fifteen point gain for the student.

Ellis says he had three objectives in developing this scratch-'n-learn insurance:

- to make it easier for him to write better, more challenging test questions,
- to relieve some of his students's test anxiety, and
- to "send the positive message to my students that *I want them to do well.*"

In writing exams, Ellis says: "I tended to shy away from essay and multiple-step problem questions." In these, he'd found, if students missed the central point of the question and went off on a tangent, they got no credit. If they got stuck on the first step of a multi-step question, they also got nothing. With a clue, students often get a lot more than a better grade.

## A Scratch on the Side of the Head

"[The clues] serve as a mechanism for promoting more analytical and creative thinking on the part of students," says Ellis. Not only can the clues help students move quickly beyond a temporary memory blank into the process of solving a problem or answering a question, thinking about whether or not to "buy" a clue affords students a means of stepping outside their anxiety for a moment and using a different kind of decision-making intelligence. That quick shifting of mental gears often proves useful in and of itself.

"I don't think I've ever had such a positive response to something," says Ellis. A survey of students found that 95% thought the test insurance was a good idea and liked the practice. Somewhere between two-thirds and three-fourths of the class of 250 students had turned to the clues for at least one question on one of the three major tests Ellis typically gives in a semester.

## Luck of the Draw

"What happens is that the top students don't use the insurance," says Ellis, "so it doesn't matter to them. And there's no negative penalty for using the clues; in other words, if a student uncovers all the clues and still doesn't get the question correct all that happens is that he gets a zero on that question."

What happens if a student uncovers a clue that he already knew? "Generally, if students spoke up and told us about it, they didn't lose points," says Ellis. But the luck-of-the-draw aspect of blind clues highlights a drawback in the method: It's not context-specific for each student's learning problem.

"I have a colleague in computer science who does that," says Ellis. "If a student comes up and asks for a clue, he gives one specific to their needs, again, for points off." But two things kept Ellis from following that approach — the size of his classes and a fear of substituting public embarrassment for private anxiety. "I thought having to come up or raise a hand for help might keep a lot of students from asking for help who could benefit from it," says Ellis. The ideal situation, he says, would be a class where all students were writing answers into a network of computer terminals and could privately signal the instructor that they needed a specific kind of help on a question. "Technologically, that's where this idea could lead in the future," Ellis says.

Until then, he'll continue to have the silk-screened sheets prepared at a cost of about $1.00 each out of a little discretionary fund he has, while looking for ways to bring the cost down. "I think we can get it done for $0.50 a page, if we can work out a few technical problems," Ellis says. But even at a dollar a sheet, Ellis believes his is one lottery actually working for education. ▮

*For further information, contact*

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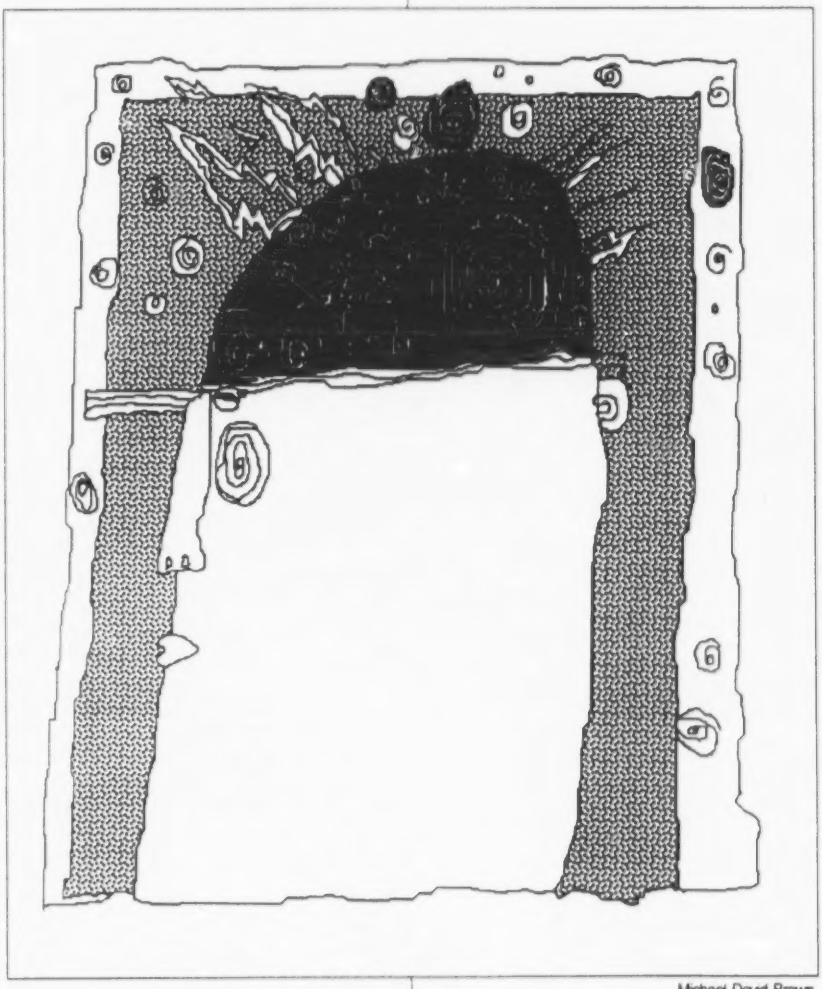
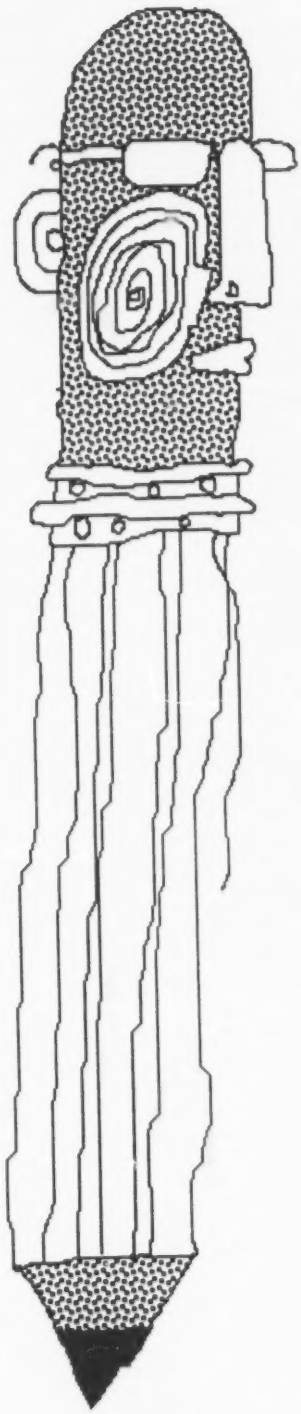


Michael David Brown

# Multicultural Education: Theory and Practice

*Compiled by Judi Conrad, Associate Director, ERIC Clearinghouse on Higher Education*



A REVIEW OF THE MULTICULTURAL LITERATURE IN THE ERIC database suggests a number of potentially useful approaches for faculty and administrators in meeting the needs of an increasingly diverse student population. Our ERIC search produced a wide variety of document types from a broad range of disciplines. All the citations given here offer something of value, but the business education documents discussed below warrant special attention. They look beyond domestic multicultural education, linking it more broadly to international and intercultural education and to the intellectual gains afforded world citizens who investigate many cultures.

## Business Education

The business education documents described here are products of the Tenth Annual East Michigan University Conference on Languages and Communications for World Business and the Professions held April 3-5, 1992 and do not yet have ERIC document numbers; however, *The National Teaching and Learning Forum* and this Clearinghouse will reproduce copies for those who want them until they become available through the ERIC Document Reproduction Service.

"Promoting Intercultural Literacy in Colleges of Business" [HE 025495] by Alexandra Jaffe and William Graves holds that : "Learning about 'other languages' and 'other cultures' simply adds another level of content to the existing curriculum," and that while important, doing so "does not address the need to help students learn to adapt to an ever changing variety of intercultural contexts of business both at home and abroad." The authors argue that cultural and linguistic content become relevant only when subordinated to a more inclusive understanding of cultural process both within and across cultures.

Hoon Park approaches multicultural education from the perspective of ego state. "Understanding Ego States: A Prerequisite for Cross-Cultural Training" [HE 025496] asserts the utility of identifying different ego states in understanding the various interpersonal communication patterns that promote or deter multicultural and intercultural exchange. Hoon describes three basic ego states:

| Ego State | Frame of Reference | Degree of Cognitive Complexity | Emotion | Attitudes |
|---|---|---|---|---|
| Child | single | low | uninhibited release | emotional implusive |
| Parent | single | medium | refrain harbor | compelling assertive |
| Adult | multiple | high | reserve | inquisitive attentive |

Hoon points out that problems arise when a child ego (emotional, irrational) encounters either another child or parent ego (unequivocally convinced that he or she knows how things "should" be) from a different culture. In contrast, adult egos strive to understand alien cultures through tolerance and openness and find themselves changed by their encounters.

Similarily, in "Valuing Diversity: The Management of the Multicultural Organization" [HE 025497] James Dayton Gunn describes how an individual moves from an ethnocentric orientation to an ethnorelative orientation. The following chart shows his concept of the evolutionary process necessary for the development of multicultural and intercultural sensitivity.

| Ethnocentric Stages | Ethnorelative Stages |
|---|---|
| Denial→Defense→Minimization | Acceptance→Adaptation→Integration |

Gunn asserts that at the lowest level, individuals simply deny that there are essential cultural differences, while in the next stage they recognize differences, but see them as negative deviations from their native cultural norms. "At the highest stage in the ethnocentric part of the model, the individual recognizes and accepts superficial differences such as eating customs, greeting customs, etc. while holding that all human beings are essentially the same (e.g., everyone is essentially like me). The initial ethnorelative stage includes both recognition and appreciation of value and behavior differences, while adaptation to difference is characterized by development of the kind of verbal and nonverbal communication skills that embrace empathy." The final stage in the Gunn model characterizes the individual who has fully internalized bicultural or multicultural frames of reference.

## Problem Identification

"Common Instructional Problems in Multicultural Classrooms" by Carol A. Jenkins and Deborah L. Bainer (1990) [ED 330 279] deals with the practical identification of multicultural problems on campus. The authors identify factors which tend to influence the academic success of minority students, as well as the faculty attitudes and behaviors that may communicate uneasiness and differentiate student learning — attitudes and behaviors which discourage academic success among minority students.

## Literature Review

Edited by Camilla A. Heid and designed for those interested in researching multicultural issues, "Multicultural Education: Knowledge and Perceptions" [ED 312 196] is a 1988 literature review produced by Indiana University's Center for Urban and Multicultural Education (includes 11 articles and 154 pages).

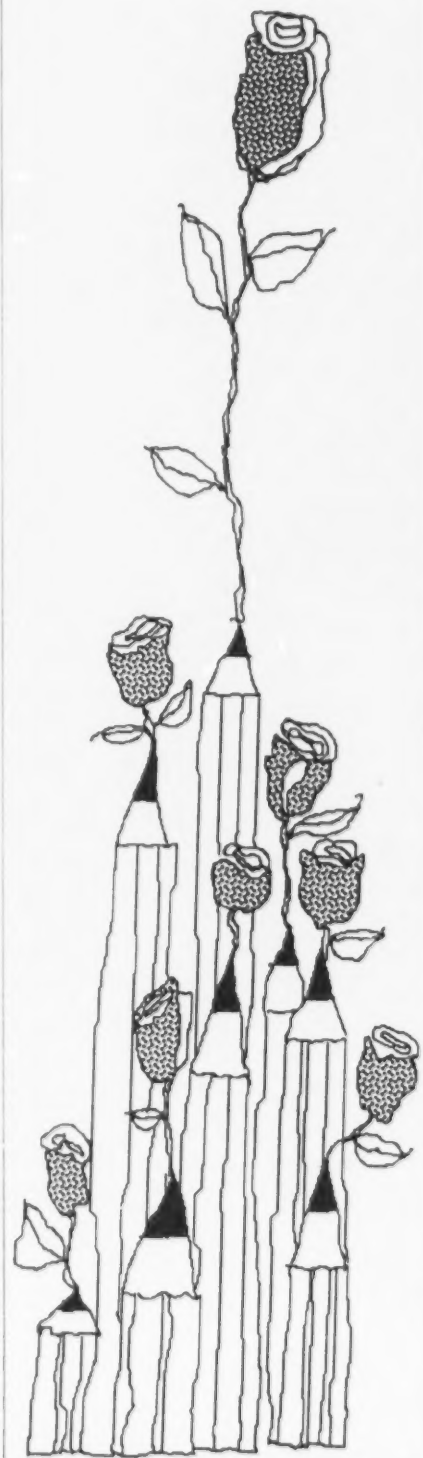
## Classroom Strategies

Among the most interesting classroom strategies unearthed in our review of ERIC citations on multicultural education were the following:

"Debunking the Myth of a Monolithic White American Culture; or, Moving toward Cultural Inclusion" by Ruth Etta Hollins (*American Behavioral Scientist*, v34,n2 p201-9 Nov-Dec 1990) [EJ 423 776] describes an assignment that asks students to research and share their respective family histories in an effort to heighten sensitivity to the cultural struggles of all ethnic groups.

"How Do You Teach World Cultures? International Students in the Classroom" by Ann Mabe (*Urban Anthropology*, v18 n1 p53-65 Spring 1989) [EJ 401 789] discusses the structure, effectiveness, and problems of a format for an anthropology class called World Cultures. After the delivery of basic research and anthropological concept lectures, an international and an American student were paired to research the international student's culture. Each pair then taught the class for a week.

"Multicultural Classrooms, Monocultural Teachers" by Terry Dean (*College Composition and Communication*, v40 n1 p23-37 Feburary 1989) [EJ 385 185] examines how academic discourse impacts on an individual's culture. The author suggests writing topics and assignments that not only help students mediate between school and home cultures, but also serve as a base for ongoing teacher research on the ways in which home and university cultures interact.



## Classroom Experimentation

"Aboriginal Teachers as Organic Intellectuals" by Rick Hesch (1990) [ED 334 041] portrays the risk-taking required of, as well as the rewards afforded to, faculty who stretch to meet the multicultural challenge. In this case, a social studies methods course of eight aboriginal women enrolled in the Saskatchewan Urban Native Teacher Education Program focused on themes of anti-racist education and critical pedagogy. The aim of the course? To create social change by developing preservice teachers into "organic intellectuals."

Organic intellectuals use the language of their culture to express the real experiences and feelings of their people. Anti-racist education focuses on changing institutions rather than individuals, and critical pedagogy incorporates student experience and lived culture as a curricular concern. The approach emphasizes dialogues that organize knowledge the students already possess.

In this course, students were asked to prepare a paper analyzing a local education policy based on multicultural assumptions; present a play applying anti-racist theory; construct a learning center with an anti-racist focus, and complete a final essay exam.

While students initially objected to the unconventional approach and were intimidated by the abstract theory of the instructor, the author finds evidence in the final exams and class evaluations that both the teacher and the students experienced personal growth and came to understand new concepts.

"Empowering Students through Collaborative Learning Strategies" by Cora Agatucci (paper presented at the 40th Annual Meeting of the Conference on College Composition and Communication (Seattle, March 16-18, 1989) ) [ED 303 807] describes the way in which student-centered classrooms, based on cooperation and community through collaborative learning, take the inherent tensions in the academy (tensions between academic and student cultures, for example) and make them productive for the student, the teacher, and the institution. (See *The National Teaching and Learning Forum*, v1, n3 for references on cooperative learning.)

"African-American Women's Quilting: A Framework for Conceptualizing and Teaching African-American Women's History" by Elsa Barkley Brown (*Signs: Journal of Women in Culture and Society*, v14 n4 p921-29 Summer 1989) [EJ 401 789] describes the qualities of African-American quilts and how to organize a classroom to reflect the polyrhythmic structure of the African-American culture and its quilts, thus affording all students the opportunity to experience a different culture and judge it by its own standards rather than by white middle-class norms.

## Research

"The Effects of Teacher Immediacy and Clarity on Instructional Outcomes: An Intercultural Assessment" by Robert G. Powell and Barbara Harville (*Communication Education*, v39 n4 p369-79 October 1990) [EJ 414 771] first examines correlations between teacher clarity and teacher verbal and nonverbal immediacy for ethnically diverse students, and then examines the correlations of clarity and verbal and nonverbal immediacy with four instructional outcomes for ethnically diverse students. Results indicate cultural differences in these relationships with correlation between instructional outcomes for all but one group.

"The Effects of Verbal and Nonverbal Teacher Immediacy on Perceived Cognitive, Affective, and Behavioral Learning in the Multicultural Classroom" by Judith A. Sanders and Richard L. Wiseman (*Communication Education*, v39 n4 p341-52 October 1990) [EJ 414 769] examines the effects of teacher immediacy in the multicultural classroom on perceived cognitive, affective, and behavioral learning for white, Asian, Hispanic, and black students. Results suggest that teacher immediacy behaviors generally enhance student learning.

## Conclusions

If the literature found in ERIC indicates what higher education is doing in the area of multicultural education, we would conclude the following:

1.Virtually all disciplines are grappling with the issue and, while communication and business education are the most active in this area, it seems reasonable to assume that multicultural education strategies are not discipline bound. It is equally likely that these strategies are also not bound to any one level of education. For a look at similar efforts in the K-12 world, contact the ERIC Document Reproduction Service (708-440-1400 or 800-443-3742) and ask for a copy of the ERIC K-12 multicultural education search.

2. Student-centered strategies (e.g., active learning, cooperative learning, collaborative learning) are more successful because they promote the kinds of interactions between students and between students and teachers that facilitate natural exposure to and exploration of differences within the context of a common goal.

3.The more we know about why we are attempting to engage in multicultural education, the better we are going to get at implementing strategies and most importantly, recognizing and dealing with our own ego states and those of our students and colleagues.

## CASE STUDIES

A GROWING NUMBER OF campuses are discovering the power of cases or case studies, as they were once more commonly called, to prompt reflective discussion of teaching. 'Additional Resources' (p. 11) lists a number of case-writing and teaching projects currently underway. With funding from the Lilly Endowment Inc., the AAHE Teaching Initiative is talking to all these projects and to other faculty across the country about the writing and use of cases in fostering "a culture of teaching."

In the coming months, The Teaching Initiative will be helping *The National Teaching and Learning Forum* locate shorter cases for publication in these pages. Each will be followed by at least two responses as a further aid to reflection and discussion. If you have a case you would like to submit or if you would like to become a respondent to cases, please write or call James Rhem, Executive Editor, *The National Teaching and Learning Forum*, 213 Potter Street, Madison, WI 53715-2050. Phone: (608) 258-8747.

The following comes from Colorado State University, where cases are being written and used to stimulate faculty discussion at monthly brown-bag lunches. Edited for publication by Prof. Kay Herr, it was written by a faculty member from one of the applied sciences.

# The Case of the Mispellings, Misspellings, Miss Spellings (?)

*Kay Herr*
*Office of Instructional Services*
*Colorado State University*
*Fort Collins, Colorado 80523*

I have never had trouble with spelling. I grew up with the notion that spelling is important and that it is something for school children to learn and for educated adults to take for granted because it is important for the precision of our communication.

In recent years I have noticed more and more that some of my students have trouble with spelling. One course that I teach is a key one in preparing college seniors to step into the professional field they have chosen. This field requires highly technical language. Many words differ by only a letter or two, yet have entirely different meanings. It is even conceivable that a wrong word could lead to a miscommunication serious enough to result in a law suit. Furthermore, much of the communication is via handwritten notes on site, precluding the use of a word processor and spelling checker.

> Just how important is spelling anyway? Is it appropriate for us to insist upon precision in written, and even oral, communications?

My students are required to write a couple of papers, and I give mainly short answer examinations. I take off points for spelling; I have always done so. In recent years I have received a few complaints about this [practice]. A couple of years ago one student complained that I may be overlooking the creative ideas of written work at the expense of attention to detail. Since receiving this comment, I have tried to be especially careful to appreciate more of the other qualities of written communication and, to some extent, overlook misspellings and other mechanical errors.

Not too long ago I was asked to write a letter of recommendation for a very good student, with whom I had worked closely. The student had outstanding organizational abilities, was highly motivated and persevering and had other good qualities and talents. I decided not to mention in the letter the fact that this highly competent person occasionally made spelling errors in written work. The student got the job. However, shortly thereafter, the employer called and was very upset that he had not been made aware of the fact that this student had a spelling problem.

To: Professor Anonymous...
From: A concerned student

Please excuse the language in this note; it doesn't reflect how I think of you as a person, but rather it expresses the strong feeling I have about one of your grading policies.

It's absolute bullshit that you subtract points from exams that contain spelling/grammar errors. This is a test, not a research report to be turned into a professional journal.

You justify this practice by likening this test situation to being on the job. This is not even a close approximation to a work situation. On the job there ar dictionaries which can be checked for correct spellings. On the job the task is to communicate your knowledge not to test it. On the job you don't get docked pay if you spell a word wrong

After having points subtracted from my last test for spelling errors, I found the test today nerveracking. I was more worried about maing sure my spelling was correct than I was to get the answer right. Subsequently, when a person is overly concerned about their spelling that's when they develop a mental block. Even simple words like 'am' become a challenge.

I understand the importance of spelling technical words correctly. If that is your mission, give us a spelling test, don't take off points for absent minded mistakes such as writing 'it's' instead of 'its'! We're people, we make mistakes. I'm not going to dock you or the secretary for the typo on our test today (2 and 3 instead of 12 and 13). I think it's wrong to make our tests for [..discipline mentioned] knowledge into tests regarding English!

Just how important is spelling anyway? Is it appropriate for us to insist upon precision in written, and even oral, communications? I feel caught in the middle between the expectations of students and the expectations of professionals. ▮

Responses to this case follow on page 10.

This publication is based on work sponsored wholly or in part by the Office of Educational Research and Improvement, U.S. Department of Education, under contract number RI880062401. Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government.

## CASE STUDY RESPONSES

*Timothy Riordan*
*Philosophy Department*
*Alverno College*

THE AUTHOR OF THE CASE assumes that college and university teachers have some responsibility to help students not only understand their fields but also communicate in them as well. The author wonders about the nature and extent of that responsibility, but it is significant that she is concerned at all about assisting students to write. Only a few years ago, that concern was often left to the English departments. Now more faculty see the necessity of addressing how students express themselves across the curriculum, not just in writing or speaking courses. That's the good news. It is also clear from the case, though, that faculty need to talk more to each other about the expectations they have for student writing and how they are going to teach to those expectations consistently across the curriculum.

So, what about spelling? How important is it? How much attention and value should teachers give to it? The case itself provides a key insight into how these questions might be answered, because it is quite clear that the significance of spelling depends to a great extent on the context and audience involved.

At the end of the case the author raises a broad question about being caught between "the expectations of students and expectations of professionals," the latter referring to the professionals in the workplace where the students are eventually headed. In my experience, student expectations result largely from what they have been taught to expect. If they have noticed that most faculty outside the English department don't pay much attention to or don't much honor the "mechanics" of writing, they will probably learn not to pay much attention either. When they do encounter a teacher who does expect attention to such details, they are confused and sometimes angry.

The author makes the point that spelling is crucial in some professional situations, and students obviously need to know that. This leads me to a relatively simple suggestion, one I learned from others and have found effective. In giving assignments, tests, or assessments, it is usually a good idea to point students toward a specific context and audience. For example, instead of asking students to write about a theory, ask them to write a proposal to a supervisor explaining the merits of a particular approach to a problem. This asks students not just to show what they know, but also how well they can communicate what they know. Then it makes a lot more sense to say to students: "How will the supervisor respond to a proposal with spelling errors? Will you be as credible as you want to be?" If we insist that students take their audiences seriously,

> "There are too many students who think they can't write because they have had trouble spelling."

and we create meaningful contexts for their responses, they may begin to see areas like spelling as practical devices to help them communicate.

Emphasizing audience in writing allows the teacher to insist on appropriate spelling without exaggerating the importance of spelling as a kind of religion. While it may be essential in some instances to conform exactly to dictionary spelling, and it may be a good idea to develop the habit of appropriate spelling in general, students should not be given the impression that spelling is at the heart of good writing. There are too many students who think they can't write because they have had trouble spelling. I find it helpful to discuss the concept of "conventions" with students, and to relate conventions in writing to the broader notion of cultural conventions. If they can see how in all aspects of life they need to know the appropriate signs in order to communicate with others, they can begin to see how something like spelling fits into that pattern of constructed meaning. This, it seems to me, is especially important at a time when our students come from diverse cultural backgrounds and often are learning English as a second language. While they may need to learn the conventions of a language that is dominant in a culture, they also need to know that their lack of familiarity with those conventions is no ultimate indication of their ability to think and communicate effectively.

Finally, I hope we are educating students to be the sort of people who will *not* be judging the quality of thinking in someone's writing by how well she or he spells. It is perhaps ironic, but not contradictory, to say that our students need to learn how to spell for some audiences and then also say that we want them to be an audience which is more flexible than others might be. While we want to prepare students for the "expectations of professionals" in their fields, we also want to educate them to change expectations that are too narrow, sometimes counterproductive, and even unfair to some. As students expand their vocabularies and use their dictionaries and spell-checkers in our classes, they should also be learning that one can say what he or she thinks in many ways. We need to model that flexibility while teaching the conventions which, for better or worse, play a serious role in most written communication. ■

*Kim Landon*
*Department of Journalism*
*Utica College of Syracuse University*

IS SPELLING IMPORTANT? YES. It's that simple. We can debate for hours the issues raised in the student's letter, and the answer will still be the same. The reality will always be that we automatically devalue a resume, memo, article or ad containing a spelling error.

I don't buy the student's argument that a professor overlooks creative

ideas at the expense of attention to detail. Did Georgia O'Keefe spare detail in order to be creative? Did Henry Ford when he built his first car? Or Thomas Edison? Or Emily Dickinson? The argument is moot. Clearly, every creative person is a stickler for detail in some form or another. One has to wonder at a person who pleads for attention to his creativity, yet demands to be allowed to be less than excellent in the mechanics used to get there.

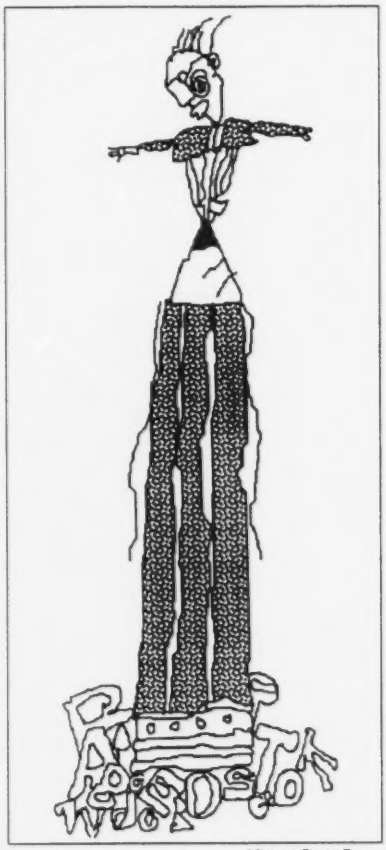
I have heard all of these arguments before. I teach journalism, a field in which a typographical or spelling error can be disastrous. More than one newspaper reporter has been fired, or at least suspended, for a misspelling, especially of a name. And, perhaps the student who argued that one doesn't get docked for misspelling on the job isn't aware how many careers have been sidelined by a client's misspelled name. We'll never know how many careers never got started because of a misspelling on a resume.

As a teacher, I insist on what I call "publishability" in written work. In other words, it has to be perfect. I deduct 10 points — a full grade — for each spelling error, and have been known to give grades in the negative numbers. At the same time, I provide ample opportunity for rewriting and encourage students who are not natural spellers to do whatever it takes

"I deduct 10 points — a full grade — for each spelling error, and have been known to give grades in the negative numbers."

to catch their spelling errors. I tell them it's not my job to teach them how to spell; it's my job to get them to use a dictionary.

I find poor spellers often have to get past their denial. Once they can admit they aren't good spellers, they



Michael David Brown

can take steps to compensate. A pocket spelling dictionary can go along on any job, and of course, if there's a word processor handy, the spell checker can be a real grade-saver.

I think the instructor in the case needs to decide what she stands for. If she's going to stand for excellence, she needs to provide her students with the tools to be excellent. That might mean providing dictionaries during a test. Or giving students a little extra time to check their spelling. Or letting them swap papers just to check each other's mechanics at the very end of an exam period.

Even raising the question of setting a different standard for "marginal" students smacks of the elitism of which the academic establishment has been so often accused. Do we want to allow a second class of students in the classroom because, after all, we all know that they can't be as good as the rest of us? To rephrase what I said earlier, a teacher's job is to give his or her students the tools to be excellent. Sometimes one of those tools may simply be a dictionary.

## Additional Resources:

For more on case writing projects and experiences contact:

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# Responding to Student Journals

*Diane Gillespie & Lynn Hunt*
*University of Nebraska - Omaha*

AS WE EXPLAINED THE journal assignment to a large introductory women's studies class, we encouraged students to write about their intellectual and emotional reactions as they read the textbook, listened to lectures, and viewed films. We emphasized that the journal would be a safe space for their reactions; they would not be graded for what they thought, although we would take their thoughts seriously. In our previous experiences, we found that the journal had been a place where students self-corrected, experimented, and usually raised their own consciousness about the effects of sex, race, and social class in their personal lives. Imagine, then, our bewilderment and surprise when halfway through the semester we were still reading passages such as these:

"I will never change."

"I am really confused about this whole women's movement, and where I stand on it. I feel that men are dominant over women and that is just the way that it should be. . . . These people who picture God as an 'it' or as a 'woman' have been completely overtaken by this women's movement and if they would simply relax and accept our role in society maybe they would be happier, more secure, and more satisfied."

"Susan [an articulate spokesperson for feminism in the class] needs to chill out. Stop looking into everything. She's always flipping out. It's not as bad as these FEMINISTS think. (I feel sorry for their husbands and sons)."

"Well, Jane [another feminist student in the class] has gone too far. I can't believe it! Who cares about how people talk, sit, touch, or stand? It's just the way things are. Aaaahhh! I am so mad!!! You make me SICK, Jane!"

Our definition of the journal as a safe space for reflection prevented us from immediate critical responses to these students. We felt trapped. We needed to confront students about their unwillingness to think further and deeper, but we needed to find a way to do it without breaking our promise of safety. If we confronted them too harshly, we feared they would withdraw since they expected us, as feminist teachers, to trample on their ideas with army boots. We intervened, however, when they began to criticize the other students.

We chose to focus on their anger. "I guess what I want to challenge you to do," Lynn wrote to the student so upset by Jane, "is to focus on exactly *why* you are so mad. For some reason, I doubt that Jane is really the source of your anger. Your comments are disrespectful to her."

We also chose to question their interpretation of conformity as safe. "I have to challenge this picture," Diane responded to the second excerpt quoted above. "The research you have been reading shows that women who have accepted their role have not necessarily been happier, more secure, and more satisfied. Some live in poverty; some have been physically abused; others have been depressed. You seem to believe strongly and passionately in this picture. I hope that your conformity does not bring you pain and poverty. But if it does, I hope this class will help you make sense of your situation in a way you might otherwise not have been able to."

Our responses moved students out of their patterns of resistance and denial. The student Lynn wrote back to responded,

"I did start thinking about why all that stuff makes me so mad. Maybe I don't want my eyes opened. . . . That's what it is. I feel like I'm going to cry. That's it. I don't want to hear about it. It's like I'm doing just fine in my little world and I don't take much to heart. That's what I'm doing — I'm shielding myself."

The student Diane replied to responded,

"After the teacher's challenge, I was able to defend my ideas intelligently. It is at this stage that I finally feel stable about my position in the women's movement. I am no longer against all aspects of it, but I realize that I am not a feminist, and that, considering the views I have, probably never will be."

The experiences we had with journals this semester challenged us as never before. We find ourselves much more reflective about our responses. We are much more intentional about when and where we intervene to confront worn out patterns of thinking. And we try to encourage authenticity in students' voices by modeling it in our own. "I am not in my fantasy land anymore," wrote one of these students in the last line of her journal. "Good," we responded. "And because of your journal, neither are we." ▮

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**ERIC Clearinghouse on Higher Education**
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One Dupont Circle, Suite 630
Washington, D.C. 20036-1183

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THE NATIONAL TEACHING & LEARNING FORUM

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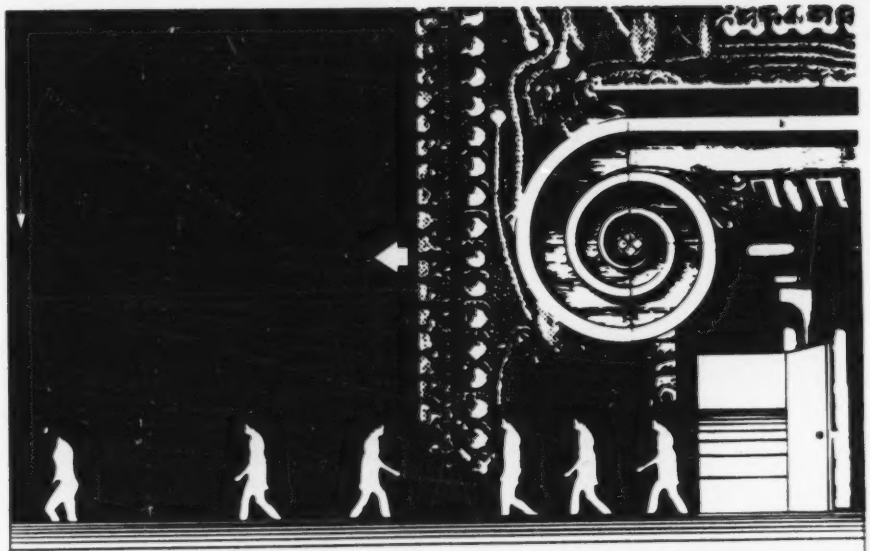
Volume 1 Number 6 1992



# Classroom Assessment/Classroom Research: Four Years Into a Hands-On Movement

Over the years Pat Cross has sometimes called it "classroom assessment." At others she's called it "classroom research." But when the time came to title the book of evaluation techniques she produced with Tom Angelo in 1988, "assessment" won out. Since then, *Classroom Assessment Techniques: A Handbook for Faculty* has become the cornerstone in one of the most wide-spread and powerful movements in the effort to improve college teaching. Originally the handbook was produced by NCRIPTL (the National Center for Research to Improve Postsecondary Teaching and Learning) at the University of Michigan. It quickly became, and continues to be, NCRIPTL's best-selling publication. In March 1993 Jossey-Bass will publish a revised and expanded version.

"The original notion — which is still the ultimate notion," says Cross, "is that teachers have a wonderful opportunity to systematically observe students in the process of learning. That's basically what research is — it's systematic observation and the collection of data about some process. So I think 'classroom research' is still an appropriate term in many ways."

But the match between a particular instructor and a particular class includes so many variables the data gathered through classroom assessment techniques aren't replicable and comparable in a strictly scientific sense. "Some people just have a picture of research in their mind, and this doesn't quite fit it," says Cross.

When the movement started, some faculty felt they were being asked to become education researchers, and they didn't want to be. That wasn't the primary aim, says Cross. The primary aim was to give teachers some practical tools (which they could freely adapt) for standing back and looking at different aspects of their teaching, measures to see how well what they were doing was working with students.

There was a time, Cross admits, when she had — not another aim exactly, but — other hopes for the data. "It was becoming increasingly obvious that learning in the disciplines differed," says Cross, "and you could not hope to have a flock of educational psychologists study all learning in all disciplines." Cross was hopeful that because faculty had more opportunity to observe students in the classroom than any researcher, their observations might provide a means of looking at these differences. "Whether that will be realized, I don't know," she says.

Perhaps it will. Hopes come true in different ways, and the 30 techniques in the handbook have spurred

tremendous interest in classroom assessment. "There are all sorts of ways of analyzing data from any of these techniques," says Cross, "and I think part of the reason classroom assessment has been so successful with intellectually curious people is that there's so much room for them to add their own interpretations and modifications." The new book, says Cross, will offer 20 additional techniques developed by faculty in various disciplines as well as 12 case studies of the effects using these assessments has had on faculty lives.

## Conversations Become Discourse

One of the unexpected by-products of the movement has been the amount of collaboration it has provoked. "Frankly, I proposed classroom research because I thought it was an independent activity that people could do by themselves, and that therefore it would appeal to faculty," says Cross. "They didn't need a grant. They didn't need to go through committees.

"Much to my surprise people don't really want to do it by themselves. They want peers to talk to, and so one of the greatest contributions of classroom research has been the discourse on teaching that it has promoted. It's hard to get a conversation going about teaching: 'How did your last class go?' But it's very easy to get a stimulating conversation going about how students responded to some question that interests you. Somebody will say, 'Well, I'll try it in my class and see what happens.' "

## Study Groups Mushroom

Ironically, once they've tried assessment some faculty do find they want to go a step further. "After they've worked for a while with classroom assessment, many people want a kind of second generation of help," says Cross. "They get hooked on it, and they want to go somewhat beyond. Those people will then go into 'classroom research'." For them Cross recommends readings on learning theory and suggests the formation of study groups where faculty can talk about the various hypotheses and theories of learning currently influencing the study of learning and cognition.

For example, says Cross, "What do we know about motivation for learning and how might faculty study that in their own classrooms? Motivation is probably not a broad general concept; it's probably motivation for learning algebra or physics or whatever it is. Motivation is probably domain-specific, and faculty are in a good place to take a look at that if they want to."

## Learning and Learning in the Disciplines

At times the national conversation about teaching has lingered over the notion that there could be no general discussion of teaching, that meaningful discussion must be domain-specific. "I think it's a mistake to go either way," says Cross. "There are general characteristics and there are specific 'pedagogical content knowledge[s],' as my colleague Lee Shulman would say. There's a knowledge about how to teach let's say, negative numbers, but there are also certain things that are general across all teaching."

## Learning (and Teaching) Through Feedback

The two meld in good teaching, and exemplary teachers know that techniques that seem simple, even elementary in the classroom can lead students to higher levels of thinking about a particular subject. That's also what happens in applying assessment techniques as a part of one's teaching, says Cross: "Faculty are then continually getting feedback which they then have to learn how to use, and it's a real intellectual challenge." The use of assessment interventions becomes a learning device for both faculty and students.

Cross gives an example of how this two-step has worked in her own teaching:

"When I use the minute paper [see accompanying profile of this technique on page 4] in my graduate class in which I'm teaching cognition at some point, one of the things I use it for is to demonstrate the different levels of cognitive development within the class. For instance, I will analyze the data from a group of minute papers and find some people feeding back to me as the most important thing they learned that day, a simple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**The National Teaching & Learning Forum** is published six times during the academic year by The George Washington University in conjunction with James Rhem & Associates, Inc. and the ERIC Clearinghouse on Higher Education.
One-year individual subscription: $39.

Application to mail at second class postage rates pending at Washington, D.C.

Postmaster: Send change of address to:
**The National Teaching & Learning Forum**
One Dupont Circle, N.W., Suite 630
Washington, D.C. 20036-1183



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fact: 'There'll be spaces for 10,000 new teachers in California community colleges in the next ten years.' Well that's interesting, but if that's the most important thing they learned that day, it's kind of disappointing.

"Somebody else will say, 'The fact that there are going to be 10,000 new teachers needed in the next 10 years

"Traditional faculty development focuses on trying to help the teacher perform better so that the observed (the teacher) changes. In classroom assessment the learner is the observed, the clue to how well the teacher is doing."

means that people are going to have to orient this new incoming group to the mission and purpose of the community college because not many of them will know much about it.' A third group shows a different level of analysis by saying that the thing that struck them was that we were going to have two generations of teachers — one, the old generation that came in during the huge bulge in the 1960s and 1970s, and then, the new generation coming in, creating the possibility of a generational clash of values and purposes and so forth.

"Well, those are different levels of cognitive perception within the class itself. And [presenting the results of a minute paper exercise is] a more complex way of feeding back relatively simple data [than merely describing different levels of cognition]. It's amazing how quickly students get that point and then strive to emulate the higher levels of development."

## The Mirror of Teaching

For a long time, talk about teaching has held a mirror up to the teacher. Classroom assessment takes a different approach to reflection. "Traditional faculty development," says Cross, "focuses on trying to help the teacher perform better so that the observed (the teacher) changes. In classroom assessment the learner is the observed, because that is the clue to how well the teacher is doing."

For Cross believes that "the individual teacher is of the ultimate importance in the classroom" and that "hard and fast rules of learning are probably not going to be anywhere in our futures." But for many faculty the use of classroom assessment techniques has made the classroom an inviting playing field. For them, probing student learning in this way has turned the business of teaching back from being an uphill fight with ignorance into a lively exploration of knowledge once again. ■

## A Closer Look at Classroom Assessment Techniques

Cross and Angelo divide the 30 assessment techniques into three broad categories, each with a number of subcategories. The divisions make sense immediately on their own terms, but are especially clear and useful when viewed through the filter of the book's introduction and the overviews that kick off each section. In these Cross and Angelo lay out the underlying assumptions of the book and guidelines for using it, and provide synopses of what current learning theories believe about cognition and teaching.

The major divisions cover techniques for assessing:

I. Academic Skills and Intellectual Development

II. Students' Self-Awareness as Learners and Self-Assessments of Learning Skills

III. Student Reactions to Teachers and Teaching Methods, Course Materials, Activities, and Assignments

The handbook describes each technique in a schematic fashion, offering an "ease-of-use" rating as well as a description of the technique, an example, procedures, pros and cons, and caveats about its use. In most cases the authors strongly recommend faculty try out these techniques on themselves before trying them with their students. Some techniques that look attractive just won't prove workable for some teachers in some circumstances. Below are profiles of a popular technique from each of the three major divisions.

### Academic Skills and Intellectual Development

#### The Defining Feature Matrix

One of the easiest techniques to use, the Defining Feature Matrix asks students to categorize items according to the presence or absence of various named features. The data offer a gauge of students' analytic and thinking skills.

The teacher compiles a list of significant features and chooses two or three categories that can be distinguished by whether they possess or do not possess the individual features. Students can quickly fill in the matrix with pluses or minuses.

This technique proves especially useful in hard science courses where the presence or absence of a concrete feature is crucial to an understanding of many categories. However, if the matrix isn't constructed carefully in order to lead students to see patterns, it can easily become a "low-level assessment of their recall of isolated facts."

*(continued on page 4)*

*("A Closer Look," cont'd)*

### Do & Say (Function & Content) Analysis

For writing courses, the Do & Say Analysis stimulates thinking about patterns and common structures in writing by asking students to separate the *communicative function* of a passage of text from its *informational content.*

Instead of a list of features, the instructor provides a list of sections — thesis statement, argument, evidence, etc. — and asks students to say first, what each *does* in the passage and second, what each *says.* Typical classes may need to have a few shots at using the technique before they understand what they're being asked to do. Once they've grasped it, however, the technique allows teachers to zero in on sticking points in students' understanding of textual analysis and also allows them to see the things their students understand well.

## Student Self-Assessment

### Self-Studies of Engaged Learning Time

This technique sounds a note familiar in the world of self-help literature, and for students its main purpose is self-help. For teachers, however, it offers a window into the operation of student minds on the level of practical skills and can guide decisions about which study skills to teach (if any) and about the length and structure of assignments.

In this exercise the instructor asks students to estimate, monitor, document and reflect on how effectively they use their study time. Taking one assignment as an example, students estimate the amount of "engaged learning time" they'll spend on it. Then they stop every 15 minutes and estimate how many of those minutes they were actively engaged learning the material. At the end, they reflect on how their original estimate compares with their own monitoring. They draw their own conclusions and write up the results anonymously.

This exercise proves useful in courses that make heavy reading or other time demands on students.

## Student Reactions to Teachers, Teaching Methods, Etc.

### One-Minute Paper

Actually, the technique usually takes at least five to ten minutes to administer; the point of its name is that it is probably the simplest, most flexible of the assessment exercises described by Cross and Angelo. It involves stopping class a bit early and asking students to respond on 3x5 cards or half-sheets of paper to one or two questions.

> If faculty aren't sure why they want the answers, they're probably better off not asking.

The questions may address any aspect of the course the teacher wants feedback on. Frequently, however, the questions become versions of these two:

1. What was the most important thing you learned in today's class?
2. What question or questions that you have from today's class remain unanswered?

Responses are anonymous and no complicated tabulation is required. Faculty simply collect the cards and note whatever useful comments they contain.

Cross and Angelo caution that if overused or poorly used, the one-minute paper can become a gimmicky, *pro forma* exercise in polling.

They warn that asking students for their feedback generally raises students' expectations that the faculty member intends to do something in response to what they have to say. If faculty aren't sure why they want the answers to the questions (and what they might do in response to them), they're probably better off not asking.

Additional Reading:
*Classroom Assessment Techniques: A Handbook for Faculty* by K. Patricia Cross and Thomas A. Angelo is available for $20 from:

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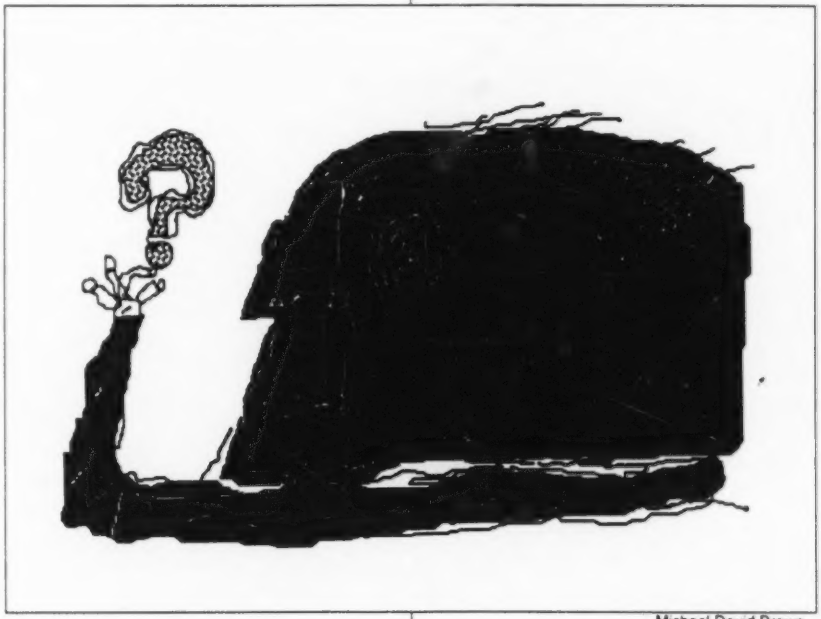

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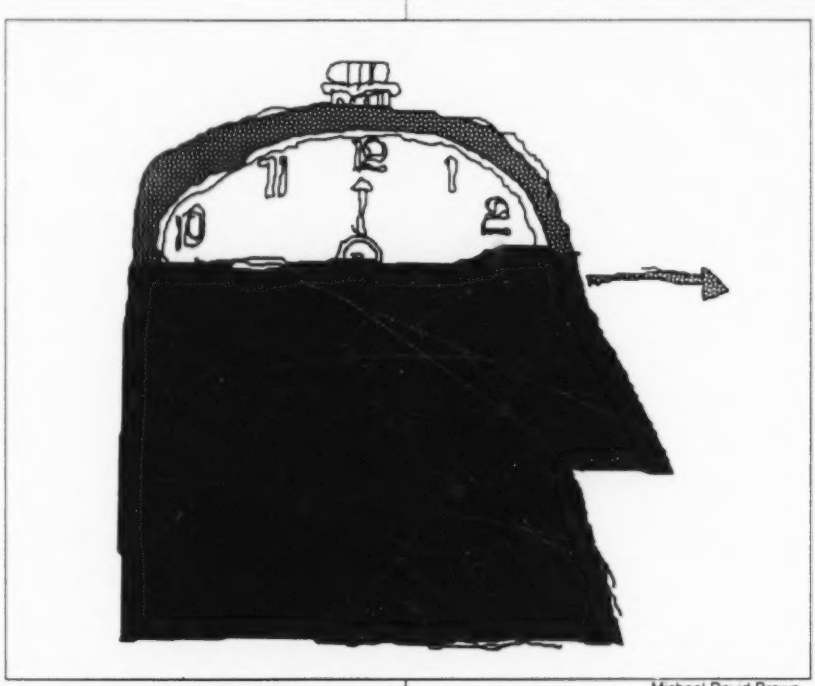

Michael David Brown

**RESEARCH WATCH**

# The Learning Cycle: Has Its Time Come Again?

What happens when an approach to teaching proves itself effective time after time, becomes popular for a while, and then begins to languish? Does it just die off? Do you let it? Not if you're Anton Lawson, professor of zoology at Arizona State University.

If there's a learning cycle movement, he's probably its leader. With well over a hundred publications exploring the application of learning cycle or inquiry-based teaching methods to his credit, Lawson knows the approach works, especially in science. "It's basically teaching science the way science is done," he says. But the learning cycle method (based largely on the patterns of learning development discovered by Jean Piaget) works well elsewhere, too. "It's applicable to any subject matter where there's a conceptual basis, and you're trying to develop explanatory constructs," says Lawson.

So what's Lawson doing to promote the use of inquiry-based instruction? In addition to writing extensively about the learning cycle (often reviewing the veritable mountain of positive research findings that have accumulated about it in the last 30 years), Lawson and his colleagues begin working this fall with a $1.7 million grant from the Howard Hughes Foundation to infuse inquiry-based instruction into the programs for majors in the sciences at Arizona State.

## Fixing the Problems

The learning cycle approach — a process classically described as a movement from *exploration* through *invention* to *discovery* (see story on page 6) — has faced two major problems over the years. First, as Lawson says: "Developing good activities is hard, hard work. It takes a lot of time and a lot of energy, and in that sense it's much more difficult [to teach this way] than simply sitting down and writing a lecture." Second, since the approach requires a greater "front-end" investment, not a lot of teachers teach this way. That in turn means new teachers haven't had a lot of models of inquiry-based instruction in their own educations, and since teachers often teach the way they were taught, the approach keeps being passed over because it seems like too much work.

But in actual practice, day to day, says Lawson, inquiry-based instruction is actually easier than regular methods. Once an instructor has thought through the questions that lie behind the processes and concepts she wants students to grasp and has composed inquiries to engage students with those questions, the teaching takes on a life of its own. "You are letting the materials, the questions, the students run the show," says Lawson, "and you are sitting back not doing much of anything. Occasionally you'll talk to kids on a one-to-one or a one-to-three to provoke further questioning, and if someone gets bogged down you can be there to help them."

## Awakening (Transferable) Higher Order Thinking Skills

The biggest attraction of inquiry-based teaching lies in its track record in developing formal reasoning or higher-order thinking skills. Piaget found that such skills could develop in humans by age 16, yet 50% of entering freshmen show no evidence of having developed them. Why?

"There's a lot of teaching out there that's not very stimulating in terms of turning on this [inquiry-based or] alternative hypothesis testing mode. There's a lot of descriptive, fact-oriented teaching. That's one thing," says Lawson. "There's the genetic potential for [higher reasoning] to develop in humans — I mean you can't develop formal thinking in dogs — but whether it's fulfilled or not depends on the stimulation from the environment. If it doesn't happen at home — if the parents take the point of view of 'Do it because I told you, Suzie, and that's it, and no arguments' and it doesn't happen in school where the teacher is saying 'No arguments. This is what I want you to remember,' then there's no source of stimulation in that person's life." Judging from the preparation of today's freshmen, half the teaching and child-rearing in America falls into these unstimulating patterns.

In contrast, a number of studies (including one conducted in Britain

and published only this year) indicate that students exposed to science instruction designed to develop formal reasoning skills carry those skills over to their work in math, English and social studies and score significantly higher than carefully selected control groups that don't have this exposure. Interestingly, when standard logic courses have tried to achieve the same result, they've failed. Only when instruction couples abstract concepts to concrete examples do the students learn the principles well enough to apply them to new and different problems. (See NCRIPTAL's *Accent on Improving College Teaching and Learning*, "Teaching Thinking in College" 1990.)

## A Model, Not a Mold

Roger Bybee, associate director of the Biological Sciences Curriculum Study (BSCS) based in Colorado Springs, says the learning cycle approach (first articulated in the 1960s) enjoyed a wave of popularity in the 1970s, a wave which receded as national funding supporting the development of lesson materials to support this approach dried up. Since then, he says, most elementary and high school science programs have "drifted back to textbooks, not activity models."

> "The difference between the educational experiences of the kindergarten student and the college Ph.D. candidate should not vary in kind, but rather in degree."

"What happened was the model got established and proven, but it was just 'out there.' It was all up to the teachers to figure out how to use it," says Bybee. That's changing now. In the mid 1980s BSCS received a major grant to develop a new Science for Life and Living curriculum for the K-6 world. After an extensive review of what had been tried and what worked in teaching science, BSCS returned to the learning cycle as the basis for its new curriculum.

> "If you're concerned with covering all that's in the textbook, then you've got a problem with this approach because you don't cover material, you uncover material with this approach."

Bybee agrees with Lawson that "the difference between the educational experiences of the kindergarten student and the college Ph.D. candidate should not vary in kind," but rather in degree. The problem at all levels, says Bybee, is that teachers get caught up in an "efficiency model," and the learning cycle model doesn't look efficient. As Lawson puts it: "If you're concerned with covering all that's in the textbook, then you've got a problem with this approach because you don't cover material, you uncover material with this approach."

"The burden of teaching and learning can't be placed on the model," says Bybee. "It's on the teacher - student interaction. The teacher remains the most important variable in the model. The learning cycle approach is a tool for teachers, not a mold for teachers. It simply increases the probability that something will be learned."

"The answer is not the important point," says Lawson. "The important point is the process. We tell students that up front and then grade them on their ability to work through the scientific process, to generate and test hypotheses, rather than on their ability to memorize facts."

But what do you do with those masses of facts? "That doesn't turn out to be a problem for the person who has deep insight into the discipline," says Lawson. "If you really understand your discipline, you can see there's a certain simplicity in it, and you can recognize that covering the facts really doesn't help you. It's the major theories that tie biology together and make it simple."

Lawson isn't shy about giving his opinion of teachers who can't see the simplicity and resist a learning cycles approach: "They may not be very good rational thinkers themselves," he says. "The bottom line of what we're saying is really quite simple in one sense: Science is partly descriptive, it's partly hypothetical, deductive, explanatory. So you can design lessons around a variety of things, but what you're trying to do in all cases is to simply get students to do science as opposed to having them listen or hear about science. The better teachers understand how science is done, the better they are able to get students right into the intellectual excitement of it and into a personal connection with it. At that point their motivation becomes their own curiosity instead of a desire to please the teacher or make a grade.

"I just think it's the direction we have to keep pushing in and eventually the system is going to catch on," says Lawson. "It's the right way to do it." ■

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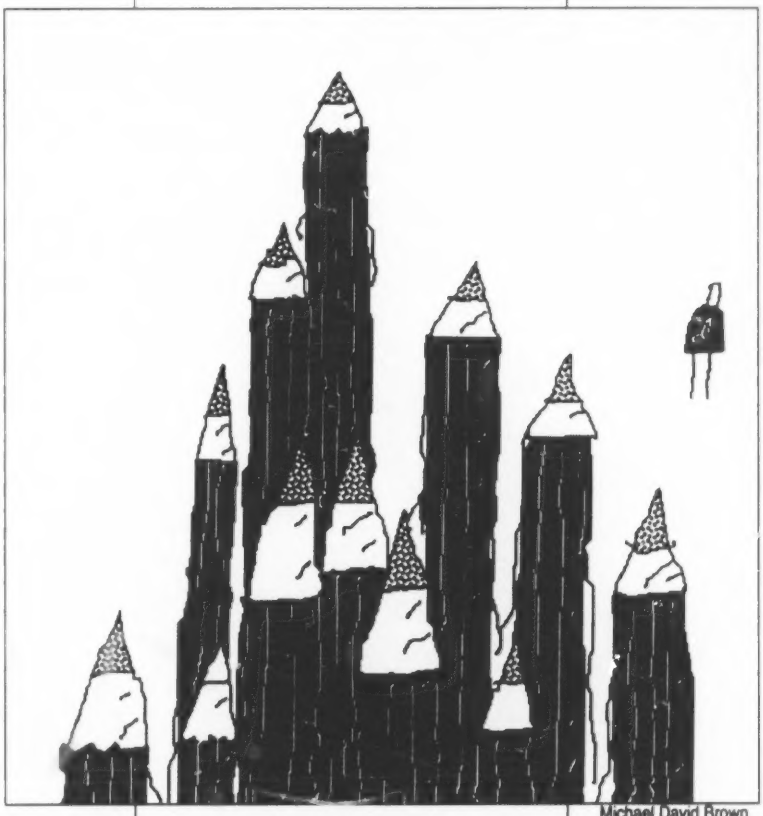
## Steps in the Learning Cycle

Advocates describe the learning cycle method of teaching as a by-product of observing how people learn. Its origins are at least as old as Socrates, they say, but its modern articulation began in the early 1960s. Robert Karplus, a physicist at Berkeley, had gone to give a talk on electricity and magnetism to his daughter's second-grade class. He became interested in how children learn. A grant from the National Science Foundation followed and helped Karplus explore a key question: "How can we create a learning experience that achieves a secure connection between the pupil's intuitive attitudes and the concepts of the modern scientific point of view?"

In the years that followed, Karplus evolved a basic paradigm of what he called "guided discovery." Its parts were *exploration*, *invention*, and *discovery*. His notion was that experience should precede conceptualization, and that conceptualization should lead to experimentation. Thus the path from description to theorizing would become clear and students would develop the habits of thought that would allow them not only to follow it, but to cut new paths with assurance.

Others have substituted new terms and added subcategories in an effort to understand the cycle more fully. Lawson calls the three phases *exploration, term introduction*, and *concept application*. Concepts, he says, are patterns with labels or terms attached. "Teachers can introduce terms, but students must perceive patterns themselves," he writes.

While the learning cycle approach offers great flexibility, it has an underlying law which must be obeyed — the sequence must be maintained. Almost any format can be adapted to a learning style approach, even lectures. Lawson fondly remembers a history of science course he once took which consisted entirely of open-ended lectures, slide presentations and discussions. The class explored the ideas of various scientists and how they went about testing them. In the process the class "invented" for itself the concept of science.



Michael David Brown

Lawson describes three types of learning cycles, each a point on the continuum from careful description to theorization and experimentation: 1) descriptive, 2) empirical-abductive, and 3) hypothetical-deductive.

- Descriptive: In these exercises students ask "What?" but do not raise the causal question "Why?"
- Empirical-abductive: Students again describe specific phenomena, but begin to speculate about possible causes for the patterns they see, "abducting" or transferring terms learned in other contexts to the new experience.
- Hypothetical-deductive: This advanced cycle begins with a causal question to which students must create alternative explanations. Learning at this end of the continuum assumes facility with the higher-order reasoning skills needed to formulate hypotheses and test them logically.

Although most of the interest in the learning cycle approach has been among scientists, Lawson has seen the method used with great success in teaching literature and other subjects as well.

Aside from the up-front work required, one of the biggest problems the learning cycle method faces is faculty resistance to any sort of labels or terms attaching themselves to their concept of teaching. "Any terminology raises red flags in some people's minds," says Lawson. "Even one person on our faculty, when we said we were going to teach science in the way science is done so the kids learn how to do research, he said 'That's great, but I ain't gunna do no *learning cycles*.' "

Further Reading:

Lawson, A.E., Abraham, M.R. and Renner, J.W. *A Theory of Instruction: Using the Learning Cycle to Teach Science Concepts and Thinking Skills*. Cincinnati: National Association for Research in Science Teaching, 1989.

# How to Improve Teaching With Learning-Centered Evaluation

*William Cerbin*
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Standard methods of teaching evaluation are seriously limited as tools for teaching improvement. Like report cards, they rarely provide insights into one's performance and how to change it for the better. But what if we took a formative, learning-centered approach to evaluating teaching?

We know the real action in the classroom lies in the relationship between teaching and learning, and that the real measure of success in teaching is whether students learn. But year-end evaluations are summative, final judgments far removed from the complexities of daily teaching and learning. If our goal is to foster better teaching, we need to look into the process of how our teaching affects learning on a day-to-day basis. In short, teaching evaluation ought to target the specific interactions between the teacher's goals, his instructional practices and the students' learning.

To illustrate, consider three slices of classroom life depicting daily teaching and learning in a college course. What kinds of information would you like to know in order to improve teaching in each situation?

- **Episode 1: Small Group Work**. Students are working in small groups developing positions on several key questions related to material they've read. Each group spends the class period discussing the issues and then develops a summary of its ideas. But the quality of the responses in the summaries is disappointing. Some are superficial, many contain irrelevant material and only a few really address the issues in a complex way.
- **Episode 2: Writing Assignment and Peer Review**. A teacher prepares writing assignment guidelines that contain detailed information about the structure and reasoning expected in an upcoming paper. In class she discusses qualities of good papers and uses examples of past students' work to illustrate key features of the assignment. After completing a draft, students participate in a peer review, critiquing one anothers' papers. They revise their efforts and turn in a final draft a week later. Half the students produce high-quality work. A third produce adequate papers. But the remaining papers are still very weak.
- **Episode 3: Lecture and Discussion**. Here a teacher presents a thirty-minute lecture designed to integrate and summarize some of the key concepts that students have read about outside of class. After the lecture, she asks students to discuss several questions related to the lecture material. Instead of the vigorous discussion she had expected, she finds students have little to say. Two or three offer partially developed ideas. Finally, she interrupts their faltering efforts and answers the questions herself.

What kinds of information might analysis and evaluation of such specific episodes yield that could help improve the teaching and increase students' learning? A single semester contains dozens of such episodes and in each teachers have specific goals and employ particular techniques aimed at having their students achieve some specific learning. Because each is so particular and so different a really useful evaluation requires different information of each episode to understand the relationship between teaching and learning in the given context.

Episode-specific information establishes a basis for analyzing and changing teaching practices at a "local level." Suppose that the small group work in episode one failed mainly because students could not reason effectively in a structured manner. This realization might lead the teacher to develop additional guidelines, explain and model effective reasoning in class, give students additional practice with reasoning in the small group setting, and monitor the group discussions more closely. Or, in the lecture/discussion episode suppose that students were, in fact, well-prepared for class and understood the lecture material but could not integrate the ideas sufficiently to discuss them immediately in class. The solution to the problem might be as simple as asking students to write out answers to the questions and then use their responses to help them get started in discussion.

But teachers don't often get episode-specific feedback from year-end evaluations, and when they do, it's too late to do anything with it for that class. The decontextualized, generic information about one's level of organization, enthusiasm and so on which summative evaluations provide remains unrelated to the daily variations, specific intentions and teaching practices of a course. Thus, while such evaluations occur as post-mortems, most lack the probing value of an autopsy. They remain far removed from the pulse of learning — weak or strong, steady or uneven, rapid or slow. And most single-visit peer observations prove equally unenlightening.

> The formative assessment process cares less about the corpse than the body, and it advocates making meaningful use of one's peers.

To be fair, the problem with current student evaluations is that we have failed to develop evaluation processes that are mutually beneficial — that lead to better teaching *and* better learning. We've also failed to educate students in how to observe and interpret teaching and learning. We rarely ask them to reflect on how various teaching practices affect their learning.

## The Basic Elements of Learning-Centered Evaluation

The formative assessment process cares less about the corpse than the body. Thus it calls for a mid-course

review of teaching. And instead of operating as though we were all in this alone, it advocates making meaningful use of one's peers. Instead of viewing problems in one's teaching as indicators of poor performance, it assumes that all teaching is problematic and involves trying to solve open-ended problems related to students' learning.

The approach includes three basic elements:

1. a course-specific teaching statement,
2. a mid-course review of teaching, and
3. a reciprocal peer consultation to help identify ways to improve teaching.

### The Teaching Statement

Writing out a) one's beliefs about teaching and learning, b) the teaching and learning objectives for a specific course, and c) ideas about how the teaching practices one plans on using are intended to help students attain those objectives clarifies the kinds of questions that need to be asked to properly assess one's teaching. As it clarifies one's thinking, creating the document provides a structured opportunity for continued reflection, revision, and exploration of ideas about one's teaching and learning.

In a departmental context, the exchange of teaching statements can foster serious discussion about what constitutes good teaching, appropriate learning objectives, the kinds of teaching practices that work best with certain material in certain circumstances, and, if the department has common aims, how faculty can address them collectively.

### The Mid-Course Review

The mid-course review brings together all the elements of learning-centered evaluation, the basic elements and their elaborations. Its unique feature is a teaching and learning questionnaire prepared by the instructor for each course and completed by the students. By mid-course the students have already seen the teaching statement as part of the course syllabus and have encountered all the major teaching techniques — lecture, small group work, etc. — the professor plans on using. Because students have received overt and detailed information about course objectives and the techniques designed to reach them, the questionnaire can focus on the relationship between these and student learning. Was one of the objectives to help students develop arguments on complex issues, to integrate and synthesize material? How well is discussion helping meet this objective? Written assignments?

### Reciprocal Peer Consultation

The formal consultation with one's peers begins by having one of them collect and summarize the feedback from the questionnaires. The instructor has already assembled a course portfolio for his colleague, a portfolio that includes, in addition to the teaching statement and syllabus, examples and summaries of students' work in the course.

Together, colleagues review and analyze this material, checking to see if what students are learning squares with what the teacher had hoped to teach. Where it doesn't — and there will always be such places — they formulate some ideas on how to alter the teaching in order to improve the learning. It's best generally to concentrate on one or two manageable improvement goals, experiment with changes and monitor the results during the remainder of the semester.

Most teachers look at their disciplines as fields of open-ended (or at least on-going) inquiry. Looking at teaching the same way reawakens one's sense of its intellectual excitement. Collaborating in such a reciprocal way acknowledges that instructional development is the mutual concern and responsibility of all faculty in an academic department. The process — since it is formative and bureaucratically unrelated to merit pay or promotion — can reduce distrust and suspicion and increase the respect, encouragement and value colleagues have for one another's work. Indeed, it has the potential to transform the entire ethos of teaching within academic departments.

What faculty find when they evaluate teaching in a learning-centered or process-oriented way is that teaching improvement seldom derives from fixing a general problem. It begins with local, not global actions. The complexities and exigencies of daily classroom teaching and learning define the problems and opportunities of effective teaching. Meaningful evaluation must take these as its focus and ask "What, how and why did my students learn or not?"

## PROGRAMS

# Who's Teaching the Teachers?

If teaching needs reform, so do administration, curriculum, and student services, according to Lee Knefelkamp, chair of the department of Higher and Adult Education at Columbia University's Teachers College. Without coordinated, systemic change, says Knefelkamp, college teaching won't improve — at least not enough and not consistently.

Others share Knefelkamp's opinion, but few have been given the extraordinary opportunity she has to put it in action shaping a future generation of teachers. Two years ago Knefelkamp left a position with the American Association of Higher Education to work at Columbia. There her job as department chair also means she leads Columbia's ten-year-old College Teaching and Academic Leadership (CTAL) program. That program, says Knefelkamp, was perhaps the first in the country founded on what were then relatively new findings about college students and how they learn. Emphasis on cognitive and developmental processes — as they actually occur, not as we might wish they did — meant taking a new approach to thinking about teaching, an approach that took learning styles and intellectual diversity seriously.

### Anticipating an Urban Education

Knefelkamp credits the program's founder, Tom Leemon, with making this approach its hallmark. But she credits Leemon with something more as well: "One of the things Tom did was catch the crest of the wave a decade ago, but also in a way he was wonderfully anticipatory about what

we're seeing now a decade later." By that Knefelkamp means not only the application of intellectual development theory, but the increasing emphasis on assessment and on what she describes as "curriculum transformation issues around the new scholarship on gender, race and class."

This scholarship takes root quickly in a place like New York City, she says. "Now virtually all our classes are infused with the new scholarship on gender, race, and class, and we have a better honed emphasis on urban education," says Knefelkamp. "We don't mean to ignore the liberal arts, but Teachers College as a whole is trying to grapple with enormous race and socio-economic class issues in education *per se*."

If the sylvan ideal of a rural liberal arts college allows the illusion that issues of community and environment can be divided from curricular and intellectual issues, the experience of the city does not. "In the city," she says, "you are confronted with a greater pressing reality of why this new scholarship should be incorporated into your teaching."

## Tri-partite Training

Integration in the broadest sense guides the teaching about teaching in Columbia's CTAL program. "For years, one of the great problems in American higher education," says Knefelkamp, "has been this tri-partite training where it's very common that student affairs people don't understand the basics about college curriculum and therefore are not part of the discussions about it on their campus or *vice versa* faculty and administrators have not understood the student affairs function." Columbia's program presses for a different philosophy: "We have refused those 'tri-chotomies,' if you will, so that all our students take courses in adult learning. All are exposed to issues of curriculum and curricular transformation. All are exposed to basic organizational systems and understanding a higher education environment."

While Columbia's program has been at the leading edge since it began (Eugene Rice taught at Columbia during the time he was developing his contribution to Ernest Boyer's *Scholarship Reconsidered* — née "The New American Scholar"), this synthesis is new in the history of the department. "We are developing a departmental core because we do not want to graduate administrators who don't understand about students or understand about faculty, and we don't want to graduate faculty who don't understand about administrators and students and we don't want to graduate student affairs people who don't understand about curriculum."

The 45 students in the CTAL program (housed within a department with over 300 students) now have an expanded palette of courses to choose from. Instead of one developmental theory course to choose from, they now have three: a basic course and a choice between two others to complete the required core sequence. Where the program had no formal assessment course before, it now offers three. Some 12 new courses added in the last 10 months have also brought a stronger emphasis on adult learning and adult transitions to the curriculum. At the same time the research emphasis broadened beyond classroom pedagogy.

> For Knefelkamp, curriculum transformation holds the key to improving teaching.

To be admitted to the program, candidates must be full-time teaching faculty with at least a master's degree. They come to Columbia for the Ed.D., and they come from a wide range of disciplines including math, English, the health sciences. "Our people return to their teaching posts," says Knefelkamp, "but very often they become provosts, department chairs, chairs of curriculum committees."

## Electric Teaching

"Twenty-five percent of our students are people of color in the College Teaching program, and about a third of the students in the department as a whole are, which is something we're very proud of," says Knefelkamp. "It's electric to go to class around here.

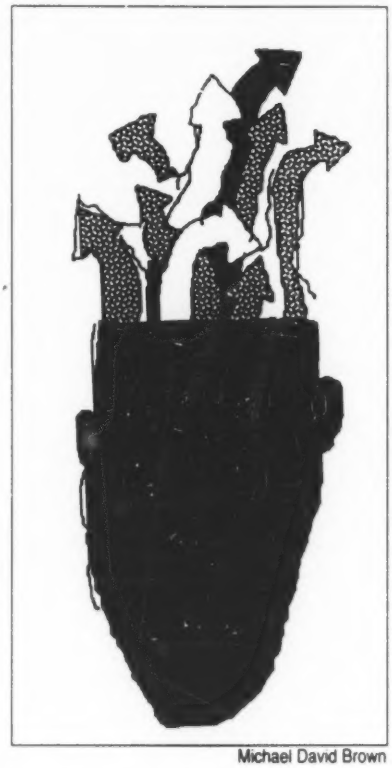
"One of the books we use is Elizabeth Minnich's book *Transforming Knowledge* (Temple University Press, 1990), a book we want our people to take a look at and really begin to take a focus on. And you can imagine reading this wonderful book by Minnich, who was the last advisee of Hanna Arendt, who is writing from a philosophical perspective, but powerfully clearly, and having that discussion going on from maybe 13 or 14 people and 10 different discipline points of view. It's extraordinary.

" Teaching around here is interdisciplinary or you don't survive. If we don't teach in an interdisciplinary way, then we can't ask people to look at this integrated perspective that we want them to look at in the university either."

Knefelkamp alternates between flights of idealistic enthusiasm and sardonic self-awareness in describing her program. The faculty, for example, she describes as "six full-time tenure track people and 8,385 adjuncts." Columbia's one credit weekend seminars, which allow her to bring in scholars like William Perry (*Forms of Intellectual and Ethical Development in the College Years*) to work one-on-one with CTAL students, she refers to kiddingly as "implosion therapy weekend experiences."

When it comes to describing the aims and interests of the program, Knefelkamp leaves kidding aside. "We're not interested in generic teaching in this department," she says. "We're interested in teaching the specific kinds of students that you have in the context of your discipline. So we're very much more into the notion of the scholarship of the discipline itself. Teaching psychology has some different challenges to it from teaching math because of the disciplines and the metaphors of the disciplines and the learning requirements of the disciplines.

"We're much more trying to get our students to have enough theoretical and assessment background to assess the particular students on



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their campus and to have enough curriculum and assessment background to be able to really assess the scholarship implied by the discipline in order to design both content and process more effectively."

## The Mission of Transformation

"We're trying really to prepare change agents, transformational kinds of leaders. That's jargony, I know, but what we're really trying to do is prepare people that are experts, not only in being better teachers, but who can be leaders in areas of assessment and curriculum design and transformation, and also in some important administrative areas. I mean, if 'The New American Scholar' works, it's going to because we've revolutionized promotion and tenure documents in a variety of ways. So we are really trying to prepare leaders for that kind of change in higher education.

"We're interested in producing people who will facilitate *fundamental* intellectual and administrative structural change."

Traditionally, however, schools of education have not had great influence on higher education, she admits. And she has strong opinions about why that's been so. "The disrespect has been sexist, basically," she says. "Schools of education became more feminized (not feminist) over the years, and for years higher education has suffered from the Germanic model that all one needed to do in terms of teaching was to know one's discipline. Any of us who have focused ourselves in terms of the *interaction* — i.e. not only knowing the discipline, but knowing who the students are and having some consciousness of one's self — I think we've been seen as more affective and less scholarly and all kinds of other prejudices along the way.

"I'm a counseling psychologist with a degree from the University of Minnesota, and I wear that armband very carefully because I'm tired of suffering from the stereotypes about schools of education."

The prejudice may remain, but on her hopeful days Knefelkamp sees it becoming increasingly irrelevant: "I think we're at a very exciting moment (and my program is trying to harness the moment) where the new scholarship has revolutionized virtually every discipline. Go to any learned society meeting: There are wonderful and exciting discussions about transforming the curriculum, and not as a demographic issue, but as an intellectual issue."

For Knefelkamp, curriculum transformation holds the key to improving teaching: "I think people are now comfortable with the notion that transformation of the curriculum is both an intellectual, curriculum issue and a pedagogical issue. And I think they aren't playing those off as dichotomous any longer."

"Transformation can't just be content-bound," she says, "it's got to include pedagogy." ■

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**VIEWPOINT**

# Reflections on the Teaching Art

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It is in many ways lamentable that the recent interest in teaching quality has focused almost exclusively on quantitative measures and techniques. Well-paid experts criss-cross the country with their bags of data and teaching tips. They claim to have discovered what good teaching is and they offer recipes for success: Just follow these simple rules — just add water — and you too will master the "teaching thing."

This exclusive focus on data and technique threatens to marginalize the teaching art. It blinds us to the overlapping values and virtues shared by the good teacher and the good person, and to the possibility that good teaching is — like any of the myriad roles we play in life — a question of character. Teaching-as-data reduces the teaching art to a numbers game. The results must be quantifiable: Good teaching is a 5.4 on a student evaluation or a 92 average on a student exam. The data can be misused as well. Colleagues boast openly about having mastered the form, and administrators use the data in ways for which they were not intended.

There is likewise too much emphasis on techniques and gadgets. We should know by now that lessons in music harmony alone do not make a great composer nor does following the recipe make a good cook. Why should we think that this or that technique alone will make us better teachers?

I prefer to see teaching as an art and as having many wonderful intangibles. To do so leaves open the possibility that what we do in the classroom works even if we are not always certain why. It invites spontaneity and creativity. Most importantly, in viewing teaching as an art we make room for the myriad styles of teaching

and not just those deemed acceptable by the experts.

Good composers and cooks achieve excellence in their respective arts because they possess, among other things, the power of attention and a deep affinity with their subject matter. These two qualities are more than mere professional tools. They are character traits and, as such, influence the whole of our lives.

The English neurosurgeon Wilfred Trotter described the power of attention as giving one's whole mind to the patient without the interposition of oneself. All of us have felt this power of attention when we have become absorbed in a conversation, in our work, or in our leisure. During these moments we lose our sense of time and our sense of self. We are not preoccupied; we become one with our friends or our work.

This power of attention has a central place in the teaching art. It is made manifest in our class preparations, in the classroom, during office hours, and any time we are engaged with our subject matter and our students. It is to give one's full attention to a student's question, to be engaged with the lecture one is giving, and to treat the subject matter seriously. It is a matter of intensity not quantity. Five minutes of full attention with a student can be worth more than an unfocused hour.

The power of attention can be missing when we grade papers in front of the television, see our classroom time as interfering with more important things, and when during office hours, we listen half-heartedly to student questions with one eye on the clock. The power of attention is diminished any time we prioritize our lives by labeling some activities as distractions.

> "I prefer to see teaching as an art. It invites spontaneity and creativity."

That we sometimes do these things does not mean that we are bad teachers. It simply points up the difficulty in achieving this intensity of focus. It is not easy to call up this power of attention after years of teaching or when one has deadlines to meet. What matters is that we recognize the power of attention and seek to develop and maintain it in our roles as teachers.

The second aspect of the teaching art is a fundamental affinity with one's students and subject matter. We should be bothered to hear colleagues complain about or belittle their students. Taken to extremes this attitude can create an unbreachable barrier between students and teacher, and interfere with the learning process. How can one possibly become excited about teaching students considered lazy and stupid? Students are human beings. Most of them are, just like us, trying their best and struggling to be good people.

We should also have an affinity with our subject matter. Some of my best teachers were those who, after the countless years of teaching the same courses, remained fascinated by their subject matter regardless of the level at which it was being taught.

These suggestions are basic but not simple. I would like to think that all teachers have a basic affinity with their students and subject matter even if we do not always show it in obvious ways. The power of attention, on the other hand, comes with practice.

We should not want merely to improve our teaching in order to get good numbers. We should aspire, rather, to be good teachers. Improving our teaching techniques might improve our numbers and win us awards. But becoming good teachers will make us better people as well. Good character, after all, spills over into every aspect of our life. ■

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This publication is based on work sponsored wholly or in part by the Office of Educational Research and Improvement, U.S. Department of Education, under contract number RI880062401. Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government.

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